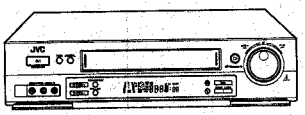
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-DD865EK/DD868EU



Hi-Fi VHS

TIME SCAN

SHOWVIEW®

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-DD868EU)*

GENERAL

Power requirement	: AC 220 – 240 V~, 50/60 Hz
Power consumption	
Power on	: 22 W
Power off	: 5.5 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 347 mm
Weight	: 4.1 kg
Format	: VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
Recording system	: DA4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	: 21-pin scart connectors : IN/OUT x 1, IN/DECODER x 1 RCA connectors: VIDEO IN x 1, AUDIO IN x 1, AUDIO OUT x 1

TUNER/TIMER

TV channel storage capacity	: 99 positions (+AUX position)
Tuning system	: Frequency synthesized tuner
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470MHz UHF 470 – 862MHz
Aerial output	: UHF channels 22 – 69 (Adjustable)
Memory backup time	: Approx. 60 min.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

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No. 82760
October 1999

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The following table lists the differing points between Models (HR-DD865EK and HR-DD868EU) in this series.

	HR-DD865EK	HR-DD868EU
VIDEO SYSTEM	PAL/NTPS ON PAL TV	PAL/MESECAM/MANUAL/ NTPS ON PAL TV
TUNER (BROADCASTING STANDARD)	I	B/G, D/K
TUNER (STEREO DECODER)	NICAM	NICAM/A2
TUNER (RF OUT CH)	22-69CH, OFF[35CH]	22~69CH, OFF(AUTO)
TUNER (RF OUT SYSTEM)	I	G, K
DISPLAY (LANG.)	ENGLISH	10 LANGUAGE
TIMER (BACKUP TIME)	10 MIN.	60 MIN.
TIMER (VCR PLUS+)	VIDEO PLUS+	SHOW VIEW
TIMER (VPS)	NOT USED	USED
TIMER (FOR AV1 & 2)(INITIAL)	USED(OFF)	USED(GER, AUS, SWE/ON / OTHER:OFF)

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

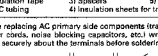


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

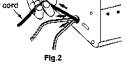


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number : 992830-001**
    2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

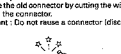


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

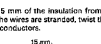


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

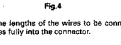


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

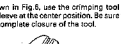


Fig.6

(5) Check the four points noted in Fig.7.

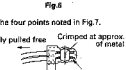

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

●Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method : (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

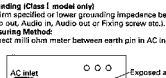


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute AC 1.5 kV 1 minute (Class II) (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).
1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

For Italy:
"It is declared that this product, brand JVC, conforms to the Ministry Decree n. 548 of 28 Aug.'95 published in the Official Gazette of the Italian Republic n. 301 of 28 Dec.'95"

The STANDBY/ON ⏻/| button does not completely shut off mains power from the unit, but switches operating current on and off. " ⏻ " shows electrical power standby and " | " shows ON.

IMPORTANT
- Please read the various precautions on this page before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

Failure to heed the following precautions may result in damage to the recorder, remote control or video cassette.

1. DO NOT **place the recorder . . .**
... in an environment prone to extreme temperatures or humidity.
... in direct sunlight.
... in a dusty environment.
... in an environment where strong magnetic fields are generated.
... on a surface that is unstable or subject to vibration.
2. DO NOT **block the recorder's ventilation openings.**
3. DO NOT **place heavy objects on the recorder or remote control.**
4. DO NOT **place anything which might spill on top of the recorder or remote control.**
5. AVOID **violent shocks to the recorder during transport.**

MOISTURE CONDENSATION
Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder turned on for a few hours to let the moisture dry.

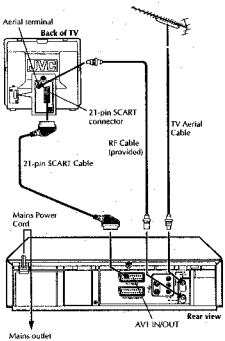
ABOUT HEAD CLEANING
Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

VHS HQ SHOWVIEW®

- Cassettes marked "VHS" (or "S-VHS") can be used with this video cassette recorder; however, only VHS signals can be played back and recorded.
- HQ VHS is compatible with existing VHS equipment.
- SHOWVIEW is a trademark of Gemstar Development Corporation. The SHOWVIEW system is manufactured under licence from Gemstar Development Corporation.

Basic Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.



Make AV connection if your TV has a 21-pin AV input connector (SCART). In order to reduce the possibility of interference. And if you are using a stereo TV, you will need this cable in order to enjoy stereo playback of videotapes.

1 CHECK CONTENTS

Make sure the package contains all of the accessories listed in "Specifications" (☞ pg. 66).

2 SITUATE RECORDER

Place the recorder on a stable, horizontal surface.

3 CONNECT RECORDER TO TV

The connection method you use depends on the type of TV you have.

RF CONNECTION
- *To Connect To A TV With NO AV Input Terminals . . .*
  - a– Disconnect the TV aerial cable from the TV.
  - b– Connect the TV aerial cable to the ANT. IN jack on the rear panel of the recorder.
  - c– Connect the provided RF cable between the RF OUT jack on the rear panel of the recorder and the TV's aerial terminal.

AV CONNECTION
- *To Connect To A TV With AV Input Terminals . . .*
  - a– Connect the aerial, recorder and TV as per "RF CONNECTION".
  - b– Connect an optional SCART cable between the AV1 IN/OUT socket on the rear panel of the recorder and the TV's 21-pin SCART connector.

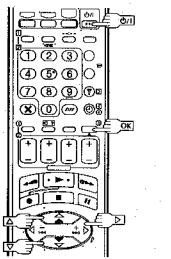
4 CONNECT RECORDER TO MAINS

Plug the end of the mains power cord into a mains outlet.

After you plug the mains power cord into a mains outlet, the Country Set display appears on the TV screen and/or on the recorder's front display panel when the ⏻/| button on the recorder/remote control is pressed for the first time to power on the recorder; go to page 4 to perform Auto Set Up.

Auto Set Up

Auto Channel Set/Auto Clock Set/Auto Guide Program Number Set



International Telephone Country Code

BELGIUM	: 32	NORGE	: 47
ČESKÁ REPUBLIKA	: 42	ÖSTERREICH	: 43
DANMARK	: 45	POLSKA	: 48
DEUTSCHLAND	: 49	PORTUGAL	: 351
ESPAÑA	: 34	SUISSE	: 41
GREECE	: 30	SUOMI	: 358
ITALIA	: 39	SVERIGE	: 46
MAGYARORSZÁG	: 36	OTHER WESTERN EUROPE	: - -
NEDERLAND	: 31	OTHER EASTERN EUROPE	: EE

ATTENTION

Once you have performed Auto Set Up, even if the recorder's memory backup has expired, all the stored stations and their Guide Program numbers remain in the recorder's memory and the recorder will not perform Auto Set Up again. You only need to set the clock. (☞ pg. 56)

If you have moved to a different area, perform each setting as required.

- Video Channel setting (for RF connection users) ☞ pg. 55
- Tuner setting ☞ pg. 48
- Clock setting ☞ pg. 56

If a new station starts broadcasting in your area, perform tuner setting (☞ pg. 48) and, if necessary, video channel setting (☞ pg. 55).

When the ⏻/I button on the recorder/remote control is pressed for the first time to power on the recorder after you plug the mains power cord into a mains outlet, the Country Set display will appear on the TV screen and the recorder's front display panel. By simply selecting your country*, the Auto Set Up function sets the tuner channels, clock** and Guide Program numbers automatically.

* If you live in Belgium (BELGIUM) or Switzerland (SUISSE), you also need to select your language.

** If you live in Hungary (MAGYARORSZÁG), Czech Republic (ČESKÁ REPUBLIKA), Poland (POLSKA) or other countries in Eastern Europe (OTHER EASTERN EUROPE), set the clock manually.

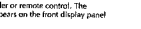
You can refer to the front display panel and/or the on-screen display to perform this procedure.

Before starting, make sure of the following:

- The TV aerial cable should be connected to the recorder.
- The recorder's mains power cord should be connected to a mains outlet.
- If you want to use the on-screen display, the TV should be set to its AV mode (with AV connection ☞ pg. 3) or UHF channel 36 (with RF connection ☞ pg. 3).

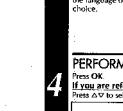
1 TURN ON THE RECORDER

Press ⏻/I on the recorder or remote control. The Country Set display appears on the front display panel and/or on the screen.



NOTE:

If you have connected your TV to the recorder with RF connection and the on-screen display appearing on UHF channel 36 looks distorted, perform "Video Channel Set" on page 55.



2 SELECT COUNTRY

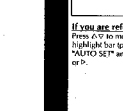
If you are referring to the front display panel

Press △/▽ to select your international telephone country code of your country referring to the chart in the left column.

(Ex.) DEUTSCHLAND is selected

If you are referring to the on-screen display

Press △/▽ to move the highlight bar (pointer) to your country's name.



NOTE:

If you have selected BELGIUM (32) or SUISSE (41), go to step 3. If you have selected MAGYARORSZÁG (36), ČESKÁ REPUBLIKA (42), POLSKA (48) or OTHER EASTERN EUROPE (EE), press OK. The Clock Set screen will appear. Set the clock manually (☞ pg. 56 – 57), then go to step 4. If you have selected any other country name (code), go to step 4.

3 SELECT LANGUAGE

Press OK. The Language Set display appears on the front display panel and/or on the screen.

If you are referring to the front display panel

Press △/▽ to select your language code.

Language Code			
ENGLISH	: 01	NEDERLANDS	: 06
DEUTSCH	: 02	SVENSKA	: 07
FRANÇAIS	: 03	NORSK	: 08
ITALIANO	: 04	SUOMI	: 09
CASTELLANO	: 05	DANSK	: 10

(Ex.) DEUTSCH is selected for SUISSE

International telephone country code — Language code

If you are referring to the on-screen display

Press △/▽ to move the highlight bar (pointer) to the language of your choice.

(Ex.) DEUTSCH is selected

4 PERFORM AUTO SET UP

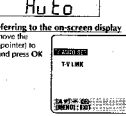
Press OK.

If you are referring to the front display panel

Press △/▽ to select "Auto" and press OK or ▷.

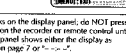
If you are referring to the on-screen display

Press △/▽ to move the highlight bar (pointer) to "AUTO SET" and press OK or ▷.



"Auto" blinks on the display panel; do NOT press any button on the recorder or remote control until the display panel shows either the display as illustrated on page 7 or "– –:– –".

- If you are using the on-screen display, the AUTO SET screen will appear. As Auto Set Up progresses, the "■" mark on the screen moves from left to right.



Beginning — End

- If "– –:– –" appears on the display panel, refer to page 7.

NOTES:

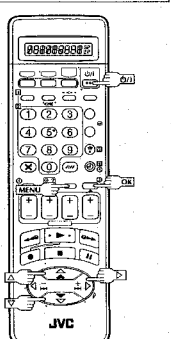
- *Auto channel set function takes place first; it assigns automatically all receivable stations in your area.*
- *Auto clock set function sets the clock automatically by reading the clock setting data from a station transmitting a PDC signal while auto channel set is being performed.*
- *During auto channel set, the recorder recognizes each station name of the detected stations and stores them in the recorder's memory, then automatically sets Show View assigned Guide Program number for those stations according to the broadcast area.*
- *In the area where no TV station transmits a PDC signal, the recorder can perform neither auto clock set nor auto Guide Program number set.*
- *If there is a power cut, or if you press ⏻/I or MENU while Auto Set Up is in progress, Auto Set Up will be interrupted; be sure to turn off the recorder power once and try again from step 1.*
- *Auto clock may not function properly depending on the reception condition.*

Preset Download

You can use this function only with the TV offering T-V Link, etc.*
* Compatible with TVs offering T-V Link, EasyLink, Megalogic, SMARTLINK, Q-Link, DATA LOGIC or NETVIEW/LINK via fully-wired 21-pin SCART cable. The degree of compatibility and available functions may differ by system.

When you connect the recorder and your TV via fully-wired 21-pin SCART cable (☞ pg. 3), you can set the recorder's tuner channels by downloading preset data from your TV instead of using the Auto Set Up function (☞ pg. 4). After downloading is completed, the recorder sets the clock and Guide Program number automatically. For details, refer to the instruction manual for your TV.

Perform steps 1 to 3 of "Auto Set Up" on page 4 and 5 before continuing.

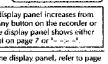


1 PERFORM PRESET DOWNLOAD

Press OK.

If you are referring to the front display panel
Press △▽ to select "CH - -" and press OK or ⊳.

If you are referring to the on-screen display
Press △▽ to move the highlight bar (pointed to "T-V LINK" and press OK or ⊳.



Preset position on the display panel increases from "CH1"; do NOT press any button on the recorder or remote control until the display panel shows either the display as illustrated on page 7 or "- - -".

- If "- -:- -" appears on the display panel, refer to page 7.
- If you are using the on-screen display, the T-V LINK screen will appear. Then the GUIDE PROG. SET screen will appear during Guide Program number set.
- If you press any button on the recorder or remote control while downloading is in progress, it will be interrupted

2 SET VIDEO CHANNEL

Set the Video Channel to oII manually. (☞ pg. 55)

NOTES:

- *In the area where no TV station transmits a PDC signal, the recorder can perform neither auto clock set nor auto Guide Program number set.*
- *If there is a power cut, or if you press 0/1 or MENU while downloading or set up is in progress, it will be interrupted; be sure to turn off the recorder power once and try again from the beginning.*
- *Auto clock may not function properly depending on the reception condition.*
- *When you perform T-V LINK function, be sure to use fully-wired 21-pin SCART cable.*
- *On this recorder, the characters available for station's name (ID) are A–Z, 0–9, - , + and ∞ (space). Some downloaded station's name may differ from those of your TV (☞ pg. 52).*

Results of Auto Set Up/Preset Download appear on the front display panel

A

When both auto channel set and auto clock set have been completed successfully the correct current time will be displayed after the **OK** button is pressed in **step 4** on page 5 or in step 1 on page 6.

B

When auto channel set has been completed successfully but auto clock set has not, "1" channel position will be displayed after the **OK** button is pressed in step 4 on page 5 or in step 1 on page 6.

C

When neither auto channel set nor auto clock set has been completed successfully, "- - : - -" will be displayed.

You can check if the Guide Program numbers have been set correctly when you perform SnowView timer Programming (☞ pg. 26); if the correct channel position number is displayed in step 3, this confirms that the Guide Program number for the SnowView number you enter in step 2 has been set correctly.

A If both auto channel set and auto clock set have been performed successfully:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **TV PROG** button(s).
- If station names (ID — ☞ pg. 53) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds when the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change channel positions, or to set or change station names, see pages 50 – 54.

B If auto channel set has succeeded but auto clock set has not:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **TV PROG** button(s).
- If station names (ID — ☞ pg. 53) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds when the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change channel positions, or to set or change station names, see pages 50 – 54.

2 Perform "Clock Set" on page 56.

C If both auto channel set and auto clock set have failed:

1 Make sure the TV aerial cable is connected properly to the recorder and turn off the recorder power once, then turn the recorder power back on again.
- The Country Set display appears on the front display panel and/or on the screen; perform steps 2 – 4 on pages 4 – 5 again or perform the procedure on page 6.

IMPORTANT

- In certain reception conditions, station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, when you time-record a TV programme using SnowView, the recorder will record a TV programme of a different station. When programming the timer using SnowView, be sure to check whether the channel position on which your recorder receives the broadcasting station you wish to record is selected (☞ pg. 26, "SnowView Timer Programming").
- Your video recorder memorizes all detected stations even if reception of some of them is poor. In these cases picture quality may be poor. To delete those stations with an unacceptable picture ☞ "Delete A Channel" on page 51.

INFORMATION

Language for the on-screen display
Auto Set Up also selects the language automatically for the on-screen display depending on the Country setting you have made in step 2 on page 4 (unless you have selected BELGIUM or SUISSE), as shown below.

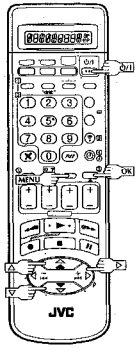
SUOMI	→	SUOMI	DANMARK	→	DANSK	NEDERLAND	→ NEDERLANDS
PORTUGAL	→	ENGLISH	ÖSTERREICH	→	DEUTSCH	GRECE	→ ENGLISH
DEUTSCHLAND	→	DEUTSCH	ČESKÁ REPUBLIKA	→	ENGLISH	OTHER WESTERN EUROPE	→ ENGLISH
POLSKA	→	ENGLISH	ITALIA	→	ITALIANO	OTHER EASTERN EUROPE	→ ENGLISH
NORGE	→	NORSK	MAGYARORSZAG	→	ENGLISH		
SVERIGE	→	SVENSKA	ESPAÑA	→	CASTELLANO		

If you want to change the language setting manually, ☞ "Language" on page 8.

Just Clock
Your recorder is equipped with the Just Clock function which provides accurate time keeping through automatic adjustments at regular intervals, by reading data from a PDC signal. If you want to take advantage of this function, simply set it to "ON".
☞ "Just Clock" on page 56.

Language

Turn on the TV and select the VIDEO channel (or AV mode).



This recorder offers you the choice to view on-screen messages in 10 different languages. Though Auto Set Up selects the language automatically (☞ pg. 7), you can change the language setting manually using this procedure as required.

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU

Press **MENU**.

3 ACCESS COUNTRY SET SCREEN

Press △▽ to move the highlight bar (pointer) to "AUTO CH SET", then press **OK** or ▷.

4 SELECT COUNTRY

Press △▽ to move the highlight bar (pointer) to your country's name, then press **OK** or ▷.

5 SELECT LANGUAGE

Press △▽ to move the highlight bar (pointer) to the language of your choice.

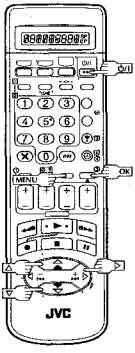
- You do not have to press **OK**; pressing **OK** enters Auto Set/T-V LINK screen.

6 RETURN TO NORMAL SCREEN

Press **MENU**.

On-Screen Displays

Turn on the TV and select the VIDEO channel (or AV mode).



You can choose whether or not to have various operational indicators appear on screen. By setting this function ON or OFF. Messages appear in the selected language (☞ pg. 7 or 8).

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS MODE SET SCREEN

Move the highlight bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.

4 ENABLE/DISABLE ON-SCREEN DISPLAY

The default setting is "ON", so if you want on-screen displays, leave the setting as it is and go to step 5. If you don't want the display to appear, press △▽ to move the highlight bar (pointer) to "O.S.D." and press **OK** or ▷ to set "O.S.D." to "OFF".

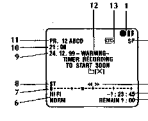
5 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *When you use this recorder as the player for editing, be sure to set "O.S.D." to "OFF" before starting.*
- *During playback, the operation mode indicators may be disturbed depending on the type of tape being used.*

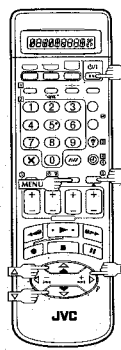
The superimposed indication on the TV screen tells you what the recorder is doing.



1– Operation mode indicators
2– Tape speed SP/LP/EP (EP is for NTSC playback only)
3– Tape direction
4– Counter display
5– Tape remaining time indicator (☞ pg. 21)
6– Audio mode display (☞ pg. 17)
7– Tape position indicator (☞ pg. 13)
8– Type of Broadcast (☞ pg. 23)
9– Current day/month/year
10– Clock display
11– Channel position number and station name/Aux. indicator (L-1, L-2 or F-1)
12– Timer warning display (☞ pg. 27, 29)
13– Cassette loaded mark

Power Save Mode

Turn on the TV and select the VIDEO channel (or AV mode).



You can reduce the power consumption while the recorder is turned off.

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

4 SELECT POWER SAVE MODE

Press △▽ to move the highlight bar (pointer) to "POWER SAVE", then press **OK** or ▷ to set to "ON".

5 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *During Power Save, the display panel will be turned off.*
- *The Just Clock function (☞ pg. 5b) does not work while the Power Save mode is engaged.*
- *While the recorder is in the Power Save mode, the picture may be distorted momentarily when you turn on/off the recorder.*
- *Power Save does not work when ...*
  ... the recorder is in the Timer mode.
  ... the recorder's power is turned off after timer-recording (or Instant Timer Recording).
  ... the Auto Satellite Prog Recording mode is engaged (☞ pg. 32).
  ... "AV2 SELECT" is set to "DECODER" or "SAT" (☞ pg. 39).

T-V Link Functions

When you connect the recorder and your TV via fully-wired 21-pin SCART cable (☞ pg. 3), the following functions are available. You can use these functions only with the TV offering T-V Link, etc.*

For details, refer to the instruction manual for your TV.

** Compatible with TVs offering T-V Link, EasyLink, Megalogic, SMARTLINK, Q-Link, DATA LOGIC or NEXTVIEWLINK via fully-wired 21-pin SCART cable. The degree of compatibility and available functions may differ by system.*

NexTView Link

You can download the EPG (Electronic Programme Guide) information from your TV for timer-programming on the recorder.

For details, refer to the instruction manual for your TV.

TV Auto Power On

You can turn on the TV and set it to video mode automatically whenever you play a tape.

For details, refer to the instruction manual for your TV.

VCR Auto Standby

You can use your TV's remote control to turn off the recorder.

For details, refer to the instruction manual for your TV.

Direct Rec

You can start recording the programme that you are watching on your TV with simple operation. Press and hold **RECORD** and press **PLAY** on the remote control, or press **RECORD** on the recorder.

Follow the procedure below to use this function.

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

4 SELECT DIRECT REC MODE

Press △▽ to move the highlight bar (pointer) to "DIRECT REC", then press **OK** or ▷ to set to "ON".

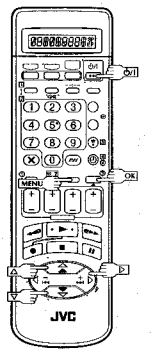
5 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *If "DIRECT REC" is set to "OFF", the **RECORD** button functions as described in "Basic Recording" (☞ pg. 20).*
- *During the Direct Rec, "- -" appears on the display panel.*
- *When you perform T-V LINK functions, be sure to use the fully-wired 21-pin SCART cable.*
- *Retake function does not work during Direct Rec (☞ pg. 22).*

Colour System Set



You can play back PAL, NTSC and MESECAM tapes, or record PAL and SECAM* signals on this recorder. Follow the procedure below to select the appropriate colour system.

* SECAM signals will be recorded as MESECAM on this recorder. MESECAM is the designation for tapes with SECAM signals that have been recorded on a MESECAM-compatible PAL video cassette recorder.

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

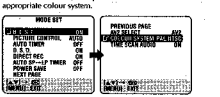
Press **MENU**.

3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

4 SELECT COLOUR SYSTEM MODE

Press △▽ to move the highlight bar (pointer) to "COLOUR SYSTEM", then press **OK** or ▷ to select the appropriate colour system.



a- PAL/NTSC: To record PAL signals, or play back a PAL or NTSC tape.

b- MESECAM: To record SECAM signals, or play back a MESECAM tape.

5 RETURN TO NORMAL SCREEN

Press **MENU**.

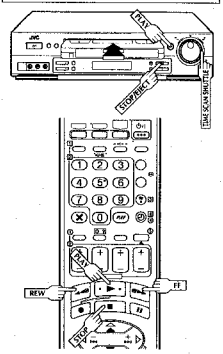
NOTES:

About NTSC Playback

- *Some TVs shrink the picture vertically and place black bars at the top and bottom of the screen. This is not a malfunction on the part of either the video recorder or the TV.*
- *The picture may roll up and down. This can be corrected using the V-HOLD control found on some TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)*
- *The counter and tape remaining time readings will be incorrect.*
- *During search, still, or frame-by-frame playback, the picture will be distorted, and there may be a loss of colour.*
- *Depending on the type of TV, the top and bottom portions of superimposed displays may be cut off during NTSC playback.*

Basic Playback

Turn on the TV and select the VIDEO channel (or AV mode).



The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.

1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is pointed toward the recorder. Don't apply too much pressure when inserting.

- The recorder power comes on automatically and the counter is reset to 0:00:00.
- If the record safety tab has been removed, playback begins automatically.

2 FIND PROGRAMME START POINT

If the tape is advanced past the start point, press **REW** or turn the **TIME SCAN SHUTTLE** ring to the left. To go forward, press **FF** or turn the **TIME SCAN SHUTTLE** ring to the right.

3 START PLAYBACK

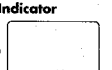
Press **PLAY**. "BEST" appears blinking in the recorder's display panel during automatic tracking. (☞ pg. 24)

4 STOP PLAYBACK

Press **STOP** on the remote or **STOP/EJECT** on the recorder's front panel. Then press **STOP/EJECT** to remove the cassette.

Tape Position Indicator

The tape position indicator appears on screen when, from the Stop mode, you press **FF**, **REW** or perform an Index Search. The position of "■" in relation to "0" (beginning) or "+" (end) shows you where you are on the tape.

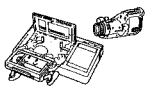


"O.S.D." (☞ pg. 9) must be set to "ON"; or the indicator will not appear.

NOTE:

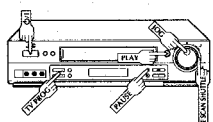
Depending on the type of tape used, there may be times when the indication is not correct.

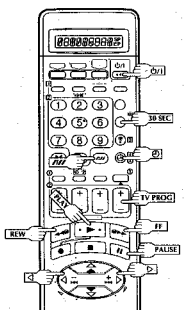
Usable cassettes



- Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
- This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Playback Features





Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**. If there is vertical jitter, use the **TV PROG** buttons to correct the picture.

- During still picture, the sound from the previous 3 seconds (approx.) will be played back repeatedly (provided there was at least 6 seconds of normal playback prior to engaging the still picture mode).
- "TIME SCAN AUDIO" must be set to "ON", or the sound will not be heard. (☞ pg. 19)

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE**.

OR

Press ◁ or ▷.

To resume normal playback, press **PLAY**.

Slow Motion

1 ACTIVATE SLOW-MOTION PLAYBACK

Turn the **TIME SCAN SHUTTLE** ring to the left or press ◁ during playback to decrease speed in the forward direction. To play in reverse slow-motion (and in reverse play mode), continue to turn the **TIME SCAN SHUTTLE** ring to the left or press ◁ after selecting all the forward direction slow-motion modes.

OR

During still picture, turn the **TIME SCAN SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion.

OR

During still picture, press and hold **PAUSE** for 2 seconds, then release. Press and release again to return to still picture.

OR

During still picture, press and hold ◁ or ▷. Release to return to still picture.

To resume normal playback, press **PLAY**.

ATTENTION

- Picture may not appear during high-speed search with an LP-recorded tape.
- In the high-speed search, still, slow motion or frame by frame playback mode, the picture will be distorted, and there will be a loss of colour.

High-Speed (Turbo) Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, press FF for forward high-speed search, or **REW** for reverse high-speed search.

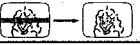
To resume normal playback, press **PLAY**.

NOTE:

*For short searches, press and hold **FF** or **REW** for over 2 seconds during playback or still picture. When released, normal playback resumes.*

Manual Tracking

Your video recorder is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the **TV PROG** buttons.



1 OVERRIDE AUTOMATIC TRACKING

Press **///** on the remote to engage manual tracking.

2 ADJUST TRACKING MANUALLY

Press **TV PROG +** or **–** to adjust tracking.

3 RETURN TO AUTOMATIC TRACKING

Press **///** on the remote to re-engage automatic tracking.

NOTE:

When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

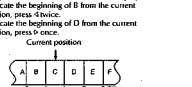
NOTE:

Before starting, make sure the recorder is in the Stop mode.

1 ACTIVATE INDEX SEARCH

Press ◁ or ▷ (I◀◀ or ▶▶I). "I◀◀ 1" or "▶▶I 1" is displayed on screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press ◁ or ▷ repeatedly until the correct index number is displayed.
  Ex.: To locate the beginning of B from the current position, press ◁ twice.
  To locate the beginning of D from the current position, press ▷ once.



- When the specified index code is located, playback begins automatically.

Skip Search

1 SKIP OVER UNWANTED SECTIONS

Press **30 SEC** 1 to 4 times during playback. Each press initiates a 30-second period of fast-motion playback. Normal playback resumes automatically.

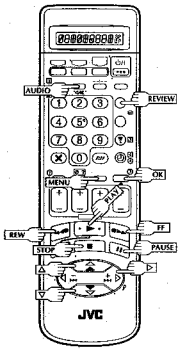
NOTES:

- *To return to normal playback during a Skip Search, press **PLAY**.*
- *It will be 9x normal playback speed with TimeScan (☞ pg. 18) during a Skip Search.*
- *Skip Search does not work properly during NTSC playback.*

Next Function Memory

The Next Function Memory "tells" the recorder what to do after rewinding. Before continuing, make sure the recorder is in the Stop mode.

a– For Automatic Start Of Playback After Tape Rewind . . .
. . . press **REW**, then press **PLAY** within 2 seconds.
b– For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press **⏻/I** within 2 seconds.
c– For Automatic Timer Standby After Tape Rewind . . .
. . . press **REW**, then press **⏲ (TIMER)** within 2 seconds.



Picture Control

This feature helps you to adjust the playback picture quality according to your preference. "The default setting is "AUTO."

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS MODE SET SCREEN

Move the highlighted bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.

3 SELECT PICTURE CONTROL SET MODE

Move the highlighted bar (pointer) to "PICTURE CONTROL" by pressing △▽, then press **OK** or ▷ to select the desired mode.

AUTO: Provides optimised picture benefits of B.E.S.T. Picture System. Normally select AUTO.

EDIT: Minimizes picture degradation during editing (recording and playback).

SOFT: Reduces image coarseness when viewing overplayed tapes containing a lot of noise.

SHARP: Clearer, sharper-edged picture when viewing images with lots of flat, same-coloured surfaces such as cartoons.

NOTES:

- *When you select EDIT, SOFT or SHARP, the selected mode will not change until you select again.*
- *When you select EDIT to dub tapes, be sure to select AUTO after you finish dubbing the tapes.*

4 RETURN TO NORMAL SCREEN

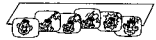
Press **MENU**.

NOTES:

- *When B.E.S.T. is OFF, "PICTURE CONTROL" switches automatically from AUTO to NORM.*
- *Select EDIT when you are dubbing tapes. Refer to page 38.*

Repeat Playback

Your video recorder can automatically play back the whole tape 50 times repeatedly.



1 START PLAYBACK

Press **PLAY**.

2 ACTIVATE REPEAT PLAYBACK

Press **PLAY** and hold for over 5 seconds, then release.

- The Play indicator (▷) on the display panel blinks slowly.
- The tape plays 50 times automatically, and then stops.

3 STOP PLAYBACK

Press **STOP** at any time to stop playback.

NOTE:

Pressing PLAY, REW, FF or PAUSE also stops Repeat Playback.

Instant ReView

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last time-recorded programme. If you have several programmes recorded, you can easily access any of them.

NOTE:

Before starting, make sure that the recorder is off and that the Timer mode is disengaged.

1 ACTIVATE INSTANT REVIEW

Press **REVIEW**. The recorder power comes on and the recorder searches for the index code indicating the start of the last timer-recorded programme. Once it's found, playback begins automatically.

- The front display panel tells you how many programmes have been timer-recorded. If you have, for example, 3 programmes, "REVIEW" and "3" appear and blink. To watch the first of the 3 programmes, press **REVIEW** three times. The recorder searches and begins playback automatically. You can access a programme as far as 9 index codes away from the current tape position.

NOTES:

- *Instant ReView is not possible while the recorder is in the Timer mode.*
- *The number of recorded programmes will not be displayed on the front display panel after Auto Satellite Prog recording (☞ pg. 32).*

Soundtrack Selection

Your video recorder is capable of recording three soundtracks (HI-FI L, HI-FI R and NORM) and will play back the one you select.

During Playback

Pressing **AUDIO** on the remote control changes the soundtrack being played back as follows:

TRACK		USE
Recorder's Front Panel	On-Screen Display	
[▷] + [◁]	HI FI L [▷] + [◁] R	For Hi-Fi stereo tapes
[▷]	HI FI L [▷]	For main audio of Bilingual tapes
[◁]	HI FI [◁] R	For sub audio of Bilingual tapes
NORM	NORM	For audio-dubbed tapes
[▷] + [◁] + NORM	HI FI NORM	For audio-dubbed tapes

NOTES:

- *[▷] + [◁] should normally be selected. In this mode, Hi-Fi stereo tapes are played back in stereo, and the normal audio track is played back automatically for tapes with only normal audio.*
- *For instructions on recording stereo and bilingual programmes, refer to page 23.*
- *"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 9).*

TimeScan

Your recorder is equipped with the TimeScan function. TimeScan allows noise free pictures to be displayed on your TV screen in the forward and reverse search modes. Audio will be played back at normal speed during the TimeScan modes (☞ pg. 19). TimeScan also allows you to view a programme in search mode while listening to the audio.

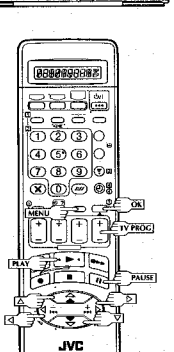
NOTES:

- *"TIME SCAN AUDIO" must be set to "ON", or the sound will not be heard in TimeScan mode. (☞ pg. 19)*
- *The audio will not synchronize with the video in TimeScan modes.*
- *In Pause mode 3 seconds (approx.) of audio will be played back repeatedly. (☞ pg. 14)*
- *In TimeScan search modes some of the audio information will not be played so that the audio can keep up with the video.*
- *Slow motion is not possible with TimeScan.*

Audio signal during TimeScan

Playback tape ① ② ③ ④ ⑤

Sound of ①, ⑤ and ② is heard.
Sound of ③ and ④ is not heard.
Output audio signal is normal (monaural) sound.



Variable-Speed Search

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback, turn the recorder's **TIME SCAN SHUTTLE** ring. It remains at that position even after you release it. Each time it passes a click position, the playback speed changes.
(Refer to the chart on page 19 for playback speeds).

OR

During playback, press ◁ or ▷.

- The more times you press, the faster the playback picture moves.
- To decrease speed, press the button for the opposite direction.
(Refer to the chart on page 19 for playback speeds).

To resume normal playback, press **PLAY**.

If the picture jitters vertically during variable-speed search:
1 Press **PAUSE**.
2 Press **TV PROG** + or – so that the vibration stops.

TimeScan

Names of special-effects playback	Reverse				Forward		
	Search	Play	Slow-Motion	*Still	Slow-Motion	Play	Search
Speed SP	-9x ↑ -7x ↑ -5x ↑ -3x	-1x	-1/6x ↑ -1/18x	0	1/18x ↑ 1/6x	1x	2x ↑ 3x ↑ 5x ↑ 7x ↑ 9x
Speed LP	↑ -7x ↑ -3x		-1/6x ↑ -1/18x	0	1/18x ↑ 1/6x	1x	2x ↑ 5x ↑ 9x
Audio output	Audio is output.		Audio is not output.	Audio is output.	Audio is not output.	Audio is output.	

*Still mode cannot be engaged using the remote control's ◁ or ▷ button. Still mode can be engaged by pressing the **PAUSE** button.

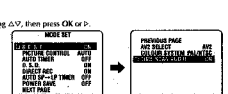
- When noise appears or the upper or lower part of the picture is distorted during TimeScan search, press ***III*** and adjust tracking with **TV PROG** + or – button.
- The speed is shown during TimeScan in the upper right corner of the TV screen for approx. 5 seconds. (The display may be distorted.)
- To resume normal playback, press **PLAY**.
- When using the recorder's **TIME SCAN SHUTTLE** ring, the playback speed may not change in the correct step if it is turned too fast.
- Picture and audio may become distorted when the recording speed changes. When this happens, resume normal playback once, and then try using TimeScan again.
- The picture may be noisy or there may be a loss of colour when you change the playback speed. (More noise will appear with LP recordings.)
- Noise may appear or the upper part of the picture may be distorted during still, frame-by-frame playback, 2x search of LP recordings, or depending on the tape being used.
- Picture may appear distorted in comparison to normal playback.
- Depending on the tape in use, noise may appear or the upper part of the picture may be distorted.
- In TimeScan mode there will be a time lag between the video and the audio and noise may appear in the audio signal.
- TimeScan sound quality will differ in comparison to normal playback.
- When material such as music videos where there is non-stop sound (very few breaks in the soundtrack) are viewed at 2x normal speed, the audio playback may be faster than normal.
- When the playback direction is reversed, it takes approximately 6 seconds until sound is heard.
- Picture will be monochrome with an LP-recorded MESECAM tape during TimeScan.
- TimeScan does not work with NTSC playback.

If you don't want to hear TimeScan audio, set "TIME SCAN AUDIO" to "OFF" (See below).

TimeScan Audio

The audio output can be set ON/OFF during TimeScan. Select ON/OFF as required.
* The default setting is "ON".

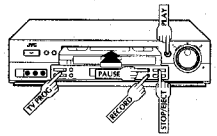
1 Press **MENU** to access the Main Menu screen.
2 Move the highlight bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.
3 Move the highlight bar (pointer) to "TIME SCAN AUDIO" by pressing △▽, then press **OK** or ▷ to select "ON" or "OFF".

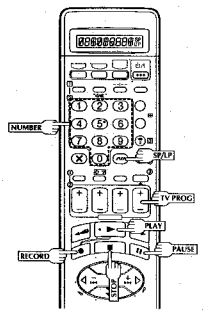


4 Press **MENU** to return to the normal screen.

Basic Recording

Turn on the TV and select the VIDEO channel (or AV mode).





Recording Resume Function

If there is a power outage during recording (or Instant Timer Recording or timer recording), the recording will resume automatically when power is restored to the recorder unless the recorder's memory backup has expired.

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. You can "capture" a TV programme using your video recorder.

1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

- The counter is reset to 0:00:00 and the recorder power comes on automatically.

2 CHOOSE A PROGRAMME

Press **TV PROG +/–** or the **NUMBER** keys to select the channel you wish to record.

3 SET TAPE SPEED

Press **SP/LP (EP)**. Check the SP/LP indicator on the recorder display panel to confirm the selected tape speed.

4 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote control, or press **RECORD** on the recorder.

B.E.S.T. takes place at the beginning of both the final SP and the final LP recording after inserting the cassette (☞ pg. 24).

If "DIRECT REC" is set to "ON", the programme that appears on the TV screen will be recorded (☞ pg. 11).

5 PAUSE/RESUME RECORDING

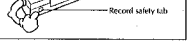
Press **PAUSE**. Press **PLAY** to resume recording.

6 STOP RECORDING

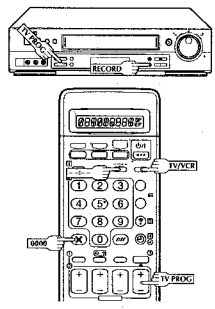
Press **STOP** on the remote control or **STOP/EJECT** on the recorder. Then press **STOP/EJECT** to remove the cassette.

Accidental erasure prevention

- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Recording Features



Instant Timer Recording (ITR)

This easy method lets you record for from 30 minutes to 6 hours (selectable in 30-min. increments), and shuts the recorder off after recording is finished.

1 START RECORDING

Press **RECORD** on the recorder.

2 ENGAGE ITR MODE

Press **RECORD** again. "⏲" blinks and 0:30 appears on the front display panel.

3 SET RECORDING DURATION

If you want to record for more than 30 minutes, press **RECORD** to extend the time. Each press extends recording time by 30 minutes.

NOTE:

*You can only perform ITR using the **RECORD** button on the recorder's front panel.*

Record One Programme While Watching Another

If your recorder is connected to the TV via AV connection, . . . , press **TV/VCR**. The recorder's VCR indicator and the TV broadcast being recorded disappear.

1 SELECT CHANNEL TO WATCH

Once recording is in progress, all you need to do is to set the channel controls on the TV for the station you wish to view.

- The programme selected with the TV's channel controls appears on the TV screen while the one selected with the recorder's **TV PROG** buttons is recorded on the tape.
- If a decoder is connected to the recorder (☞ pg. 46), you can select a scrambled channel as well with the TV channel controls.

Elapsed Recording Time Indication

You can check the exact time of a recording.

1 SET COUNTER DISPLAY

Press –:–– until a counter reading appears on the display panel.

2 RESET COUNTER

Press **0000** before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs.

Tape Remaining Time

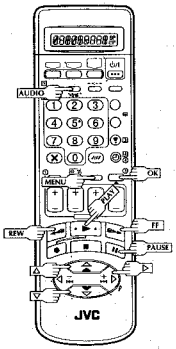
1 DISPLAY REMAINING TIME

Press –:–– until the time remaining on the tape appears.

- The display panel shows the tape remaining time with "▷▷" displayed.
- By pressing the – +/+ – button, you can change the display to show the counter reading, channel position*, clock time or tape remaining time.
  ** channel position is not displayed during playback.*

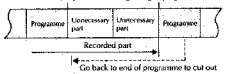
NOTE:

Depending on the type of tape used, there may be times when the tape remaining time reading may not appear right away, or is not correct. "–:––" may sometimes appear, or the display may blink on occasion.



Retake

You can cut out unnecessary parts of a TV programme while you're recording it.



1 ENGAGE RECORD-PAUSE MODE

Press **PAUSE** during recording.

2 LOCATE START POINT

Hold down **REW** or **FF** and release it when you reach the point where you want to resume recording.
* Your recorder returns to the Record-Pause mode.

3 RESUME RECORDING

Press **PLAY** when you wish to resume recording.

NOTE:

Retake function does not work during Direct Rec (☞ pg. 11).

Hi-Fi Audio Recording Level Control

Your recorder allows manual adjustment of the Hi-Fi audio recording level.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS HI-FI REC LEVEL CONTROL SCREEN

Press △▽ to move the highlight bar (pointer) to "REC LEVEL CTL", then press **OK** or ▷.

3 ADJUST AUDIO RECORDING LEVEL

Press △ or ▽.

* Press △ or ▽ briefly 5 times to move the on-screen's audio levels by one division on the scale. To move the audio levels faster, keep △ or ▽ pressed.
* Adjust the recording level while watching the recorder's audio level meters. Set the level so that maximum volume causes the meters to vary between 0dB to 4dB.

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

* *Noise will increase if the recording level is too low, while distortion will increase if the level is too high.*
* *When you finished Hi-Fi Audio recording, be sure to set the level control back to its centre position.*

Receiving Stereo And Bilingual Programmes

Your recorder is equipped with a Sound-Multiplex decoder (A2) and a Digital stereo sound decoder (NICAM) making reception of stereo and bilingual broadcasts possible.

When the channel is changed, the type of broadcast being received will be displayed on the TV screen for a few seconds.

Type of Broadcast Being Received	On-screen Display
A2 Stereo	ST
A2 Bilingual	BIL
Regular Monaural	(none)
NICAM Stereo	ST NICAM
NICAM Bilingual	BIL NICAM
NICAM Monaural	NICAM

* To listen to a stereo programme, press **AUDIO** until "☎" and "☎" appear on the front display panel or "Hi-Fi L ▷◁ R" appears on the screen.
* To listen to a bilingual programme, press **AUDIO** until "☎" or "☎" appears on the front display panel, or "Hi-Fi L ▷" or "Hi-Fi ◁ R" appears on the screen (as required).
* To listen to the Standard (regular monaural) audio while receiving a NICAM broadcast, press **AUDIO** until "NORM" appears on the front display panel or on the screen.

NOTE:

"O.S.D." must be set to "On" or the on-screen displays will not appear (☞ pg. 9).

To Record Stereo And Bilingual Programmes (A2)

* Stereo programmes are automatically recorded in stereo on the Hi-Fi audio track (with the normal audio track recording mixed L and R channel sound).
* Bilingual programmes are automatically recorded in bilingual on the Hi-Fi audio track. The main soundtrack will be recorded on the normal audio track.

To Record NICAM Stereo And Bilingual Programmes

The NICAM audio programme will be recorded on the Hi-Fi audio track, and the Standard audio programme on the normal audio track.

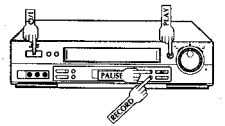
NOTES:

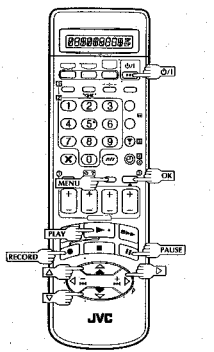
* *If the quality of stereo sound being received is poor, the broadcast will be received in monaural with better quality.*
* *Before playing back a programme recorded in stereo, or a bilingual programme, refer to "Soundtrack Selection" (☞ pg. 17).*

B.E.S.T. Picture System

The B.E.S.T. (Bi-conditional Equalised Signal Tracking) system checks the condition of the tape in use during recording and playback, and compensates to provide the highest-possible recording and playback pictures. The default setting for both recording and playback is "ON".

Turn on the TV and select the VIDEO channel (or AV mode).





Preparation

1 TURN ON THE RECORDER

Press 0/1.

2 ACCESS MAIN MENU SCREEN

Press MENU.

3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

4 SELECT B.E.S.T. MODE

Press △▽ to move the highlight bar (pointer) to "B.E.S.T.", then press **OK** or ▷ to set to "ON" or "OFF".

5 RETURN TO NORMAL SCREEN

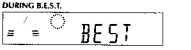
Press MENU.

Recording

1 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote, or press **RECORD** on the recorder.

DURING B.E.S.T.



B.E.S.T. COMPLETE

- The recorder spends approximately 7 seconds assessing the condition of the tape, then begins recording.

NOTES:

- *The B.E.S.T. system works for both SP and LP modes only after a tape has been inserted and the Record mode is first initiated. It does not work during recording.*
- *The B.E.S.T. system does not work while Auto Satellite Prog recording is in progress (☞ pg. 32).*
- *In the case of timer recording, the B.E.S.T. system works before recording is initiated.*
- *Once the cassette is ejected, the B.E.S.T. data is cancelled. The next time the cassette is used for recording, B.E.S.T. is re-performed.*
- *Pressing the recorder's **RECORD** button while "BEST" is displayed does not start Instant Timer Recording (☞ pg. 21).*

ATTENTION

*Since the B.E.S.T. system works before recording actually starts, there is a delay of approximately 7 seconds after **RECORD** and **PLAY** on the remote are pressed, or **RECORD** on the recorder is pressed. To make sure you record the desired scene or programme in its entirety, first perform the following steps:*

*1) Press and hold **PAUSE** and press **RECORD** to engage the RECORD PAUSE mode.*
- *The recorder then automatically checks the condition of the tape and, after approximately 7 seconds, re-enters RECORD PAUSE.*

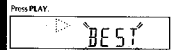
*2) Press **PLAY** to start recording.*
- *If you want to bypass the B.E.S.T. system and begin recording immediately, set "B.E.S.T." to "OFF" in step 4 on page 24.*

Playback

The recorder assesses the quality of the tape once you initiate playback.

1 START PLAYBACK

Press PLAY.



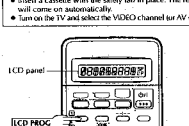
- The recorder adjusts the playback picture quality based on the quality of the tape in use.
- B.E.S.T. is active during Auto Tracking. "BEST" appears blinking on the recorder's display panel.

NOTES:

- *When watching a tape recorded with "B.E.S.T." set to "ON", it is recommended that you leave B.E.S.T. on during playback as well.*
- *When watching a rental tape or one recorded on another video recorder, or when using this recorder as the player for editing, set B.E.S.T. to your preference by performing steps 1 through 5 on page 24.*
- *"BEST" only appears at the beginning of automatic tracking. Even though it doesn't appear after that, the B.E.S.T. function is operative.*

SHOWVIEW Timer Programming

Before performing SHOWVIEW Timer Programming:
- Make sure that the recorder's built-in clock is set properly.
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).

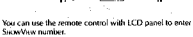


You can use the remote control with LCD panel to enter the SHOWVIEW number.

1 ACCESS SHOWVIEW DISPLAY

Press **LCD PROG.**

The LCD panel looks like this:



2 ENTER SHOWVIEW NUMBER

Press the **NUMBER** keys to enter the SHOWVIEW number of a programme you wish to record, then press **▼**.

- If you make a mistake, press X and input the correct number.

The SHOWVIEW number you enter appears on the LCD panel:

Then go to step 3 in the right column.

With SHOWVIEW, timer programming is greatly simplified because each TV programme has a corresponding code number which your recorder is able to recognize.

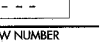
1 ACCESS SHOWVIEW SCREEN

Press **PROG.**

The front display panel looks like this:

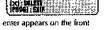
2 ENTER SHOWVIEW NUMBER

Press the **NUMBER** keys to enter the SHOWVIEW number of a programme you wish to record, then press **OK**.



- If you make a mistake, press X and input the correct number.

The SHOWVIEW number you enter appears on the front display panel:

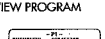


The display panel can show only a 4-digit number.

3 ACCESS SHOWVIEW PROGRAM SCREEN

The SHOWVIEW Program screen appears (if you're just starting out, "P1" appears).

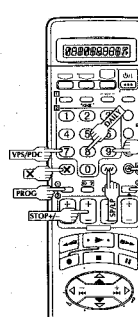
The display panel shows the programme start time. Pressing ⏻ **/ I** changes the display to the programme stop time, then the date and channel position.



IMPORTANT

Make sure the channel position number you wish to record is displayed. If not, see "SHOWVIEW Setup" on page 58 and set the Guide Program number for that SHOWVIEW number correctly.

- If the number you entered is invalid, "ERROR" appears on the screen and "Err" appears on the display panel. Press X and input a valid SHOWVIEW number.
- If the "GUIDE PROG SET" screen appears, see "ATTENTION – Regarding Guide Program Number Set" on page 27.



Satellite Tuner Users

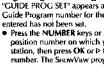
To timer-record a satellite broadcast using SHOWVIEW:
1. Set "AV2 SELECT" to "AV2" (☞ pg. 39).
2. Perform steps 1 – 7.
3. Set the satellite tuner to the appropriate channel before the selected programme begins.
4. Leave the satellite tuner's power on.

ATTENTION

Regarding Guide Program Number Set

"GUIDE PROG SET" appears after performing step 3 if the Guide Program number for the SHOWVIEW number you entered has not been set.

- Press the **NUMBER** keys or △/▽ to input the channel position number on which your recorder receives that station, then press **OK** or ▷ to set the Guide Program number. The SHOWVIEW program screen appears.



(Ex.) To timer-record a ZDF programme with SHOWVIEW.
* If your recorder receives ZDF on the channel position 2, press **OK** or ▷ after entering "2".

4 SET TAPE SPEED

Press **SP/LP (AIW)** to set the tape speed.

5 SET VPS/PDC MODE

Press **VPS/PDC** to select "ON" or "OFF".

If "VPS/PDC: ON" is displayed on the screen or "VPS/PDC" is lit on the display panel, VPS/PDC is set to ON.

If "VPS/PDC: OFF" is displayed on the screen or "VPS/PDC" is not lit on the display panel, VPS/PDC is set to OFF.

☞ "VPS/PDC Recording" on page 29.

6 RETURN TO NORMAL SCREEN

Press **PROG** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

- Repeat steps 1 – 6 for each additional programme.

7 ENGAGE RECORDER'S TIMER MODE

Press ⏻ **(TIMER)**. The recorder turns off automatically and ⏻ appears on the display panel.

- To disengage the timer, press ⏻ **(TIMER)** again.

NOTES:

- *To Change The Stop Time . . .*
  . . . press **STOP** *+/– in step 3. You can compensate for anticipated programme schedule delays this way.*
- *To Timer-Record Weekly Or Daily Serials . . .*
  . . . in step 3, press **WEEKLY** *(***NUMBER** *key "9") for weekly serials or* **DAILY** *(***NUMBER** *key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.*
- *You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 30).*
- *It is not possible to timer-record a TV programme with a SHOWVIEW number which starts with "0".*

Timer Warning

If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on screen to tell you that the recording, is to start in 5 minutes.

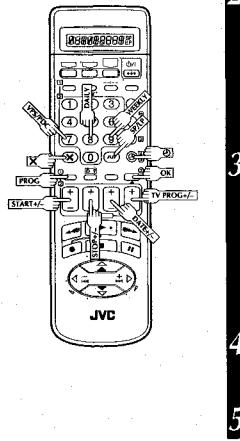
NOTES:

- *The warning only appears if you're not in the Timer mode at that time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen is recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press X.

Express Timer Programming

Before performing Express Timer Programming:
- Make sure that the recorder's built-in clock is set properly.
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).



If you don't know the ShowView number for the programme you wish to record, use the following procedure to set your recorder to timer-record the programme.

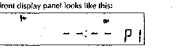
1 ACCESS SHOWVIEW SCREEN

Press **PROG.**

2 ACCESS PROGRAMME SCREEN

Press **START +/–**. (If you're just starting out, "P1" appears.)

The front display panel looks like this:



3 ENTER PROGRAMME START TIME

Press **START +/–** to enter the time you want recording to start.

- Press and hold **START +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.

The front display panel looks like this:

4 ENTER PROGRAMME STOP TIME

Press **STOP +/–** to enter the time you want recording to stop.

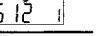
- Press and hold **STOP +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.

5 ENTER PROGRAMME DATE

Press **DATE +/–**. (The current date appears on screen. The date you enter appears in its place.)

6 ENTER CHANNEL POSITION

Press **TV PROG +/–**.



7 SET TAPE SPEED

Press **SP/LP (*AV*)** to set the tape speed.

8 SET VPS/PDC MODE

Press **VPS/PDC** to select "ON" or "OFF".
If "VPS/PDC ON" is displayed on the screen or "VPS/PDC" is lit on the display panel, VPS/PDC is set to ON. If "VPS/PDC OFF" is displayed on the screen or "VPS/PDC" is not lit on the display panel, VPS/PDC is set to OFF.
(☞ "VPS/PDC Recording" in the right column.

9 RETURN TO NORMAL SCREEN

After confirming all information is correct, press **PROG** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

- Repeat steps 1 – 9 for each additional programme.

10 ENGAGE RECORDER'S TIMER MODE

Press ⏲ **(TIMER)**. The recorder turns off automatically and ⏲ appears on the display panel.

- To disengage the timer, press ⏲ (TIMER) again.

To Timer-Record Weekly Or Daily Serials . . .
. . . anytime during steps **2** *through* **9**, *press* **WEEKLY (NUMBER** key "9") for weekly serials or **DAILY (NUMBER** key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

NOTE:

You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 30).

Satellite Tuner Users
To timer-record a satellite broadcast using Express Timer Programming:
1. Set "AV2 SELECT" to "AV2" (☞ pg. 39).
2. Perform steps **1 – 10**. Enter "L-2" for the channel position in step **6**.
3. Set the satellite tuner to the appropriate channel before the selected programme begins.
4. Leave the satellite tuner's power on.

VPS/PDC Recording

Now available from some TV stations, PDC (Programme Delivery Control) and VPS (Video Programme System) are service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over the advertised times you may have preset into the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

NOTES:

- *When you use Express Timer Programming, set the start time (VPS or PDC time) exactly as advertised in the TV listing. A different time than advertised will result in no recording.*
- *VPS/PDC recording is also possible when a satellite tuner or a cable system is connected to AV2 IN/DECODER on your recorder.*
- *VPS/PDC recording is also possible via the AV1 IN/OUT connector.*

How to check if the station being received transmits a VPS/PDC signal
1. Press – – – until the channel position appears on the display panel.
2. Hold down **START +** for about 5 seconds.
   - "VPS/PDC" appears blinking on the display panel.
   If a VPS/PDC signal is detected from the station, "VPS/PDC" will stop blinking.
   If no VPS/PDC signal is detected from the station, "VPS/PDC" will blink at a slower rate.
3. Press – – – or **START –** again to return to normal display.

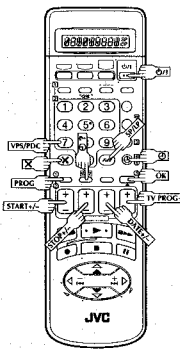
Timer Warning

If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on screen to tell you that the recording is to start in 5 minutes.

NOTES:

- *The warning only appears if you're not in the Timer mode at that time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen is recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press X.



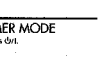
Check, Cancel And Replace Programmes

1 DISENGAGE TIMER MODE

Press ⏲ (TIMER), then press ⏻/I.

2 ACCESS PROGRAM CHECK SCREEN/DISPLAY

Press ⏲ ?.



3 ACCESS PROGRAM SCREEN/DISPLAY

Press ⏲ ? again to check more information. Each time you press ⏲ ?, the next programme's information appears.

- The display panel shows the programme start time. Pressing OK changes the display to the programme stop time, then the date and the channel position.

To cancel or replace a programme...

4 CANCEL OR REPLACE A PROGRAMME

Press X to cancel a programme. To replace a programme, press the appropriate button: START+/-, STOP+/-, DATE+/-, TV PROG+/-, VPS/PDC, SP/LP (///).

5 RETURN TO NORMAL SCREEN/DISPLAY

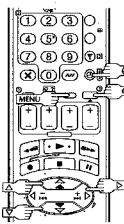
Press ⏲ ? as many times as necessary. If there are still some programmes remaining, go on to step 6.

6 RETURN TO TIMER MODE

Press ⏲ (TIMER).

NOTE:

You can also check the programmes on the display panel even if the recorder's power is off (unless the recorder is in the Power Save mode (☞ pg. 10)) or the recorder is in the Timer mode; however, it is not possible to cancel or replace the programmes.



Auto Timer

When the Auto Timer is set to ON the timer is automatically engaged when the recorder power is turned off and automatically disengaged when the recorder is powered back on.

1 ACCESS MAIN MENU SCREEN

Press MENU.

2 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press OK or ▷.

3 SELECT MODE

Press △▽ to move the highlight bar (pointer) to "AUTO TIMER", then press OK or ▷ to select either "ON" or "OFF".

4 RETURN TO NORMAL SCREEN

Press MENU.

NOTE:

For safety, when Auto timer is set to "OFF", all other recorder functions are disabled while the Timer mode is engaged. To disengage the timer, press ⏲ (TIMER).

Auto SP→LP Timer

If, when timer-recording in SP mode, there is not enough tape to record the entire programme, the recorder automatically switches to LP mode to allow complete recording.

For Example . . .

Recording a programme of 210 minutes in length onto a 180-minute tape

Approximately 150 minutes	Approximately 60 minutes
SP mode	LP mode

Total 210 minutes

Make sure you set "AUTO SP→LP TIMER" to "ON" at the Mode Set screen before the timer-recording starts.

1 ACCESS MAIN MENU SCREEN

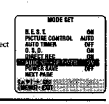
Press MENU.

2 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press OK or ▷.

3 SELECT MODE

Press △▽ to move the highlight bar (pointer) to "AUTO SP→LP TIMER", then press OK or ▷ to select "ON".



4 RETURN TO NORMAL SCREEN

Press MENU.

NOTES:

- *If you have programmed the recorder to timer-record 2 or more programmes, the second programme and those thereafter may not fit on the tape if you set "AUTO SP→LP TIMER" to "ON". In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *In order to ensure that the recording fits on the tape, this feature may leave a slight non-recorded section at the end of the tape.*
- *There may be some noise and sound disturbance at the point on the tape where the recorder switches from SP to LP mode.*
- *The Auto SP→LP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly with any tapes longer than E-180 or with some tapes of shorter lengths.*
- *If you perform timer recording with both VPS/PDC and the Auto SP→LP Timer activated, and the programme goes beyond its originally scheduled length, there may be times when the programme cannot be recorded in its entirety.*

Automatic Satellite Programme Recording

This facility allows you record automatically a satellite programme which is timer-programmed on your external satellite tuner. Connect a satellite tuner to the recorder's AV2 IN/DECODER connector (☞ pg. 44, 45) and programme the timer on the satellite tuner; the recorder starts recording when the signals input from the satellite tuner to the AV2 IN/DECODER connector, and when there is no input signals the recorder stops recording and the power shuts off.

Before performing the following steps:
- Make sure the satellite tuner is connected to the recorder's AV2 IN/DECODER connector. (☞ pg. 44, 45)
- Programme the timer on the satellite tuner.
- Insert a cassette with the safety tab in place.

1 SELECT AV2 SELECT MODE

Set "AV2 SELECT" to "AV2" (☞ pg. 39).

- When you select "SAT", refer to "IMPORTANT" on page 44.

2 SET TAPE SPEED

Press **SP/LP** (**/AV**) to set the tape speed.

3 ENGAGE AUTO SATELLITE PROG REC MODE

Press and hold **REC LINK** on the recorder for about 2 seconds. The button lights up and the recorder turns off automatically.

- To disengage the Auto Satellite Prog Rec mode, press **REC LINK**. The button's light goes off.
- If the recorder's power is off, it is not possible to engage the Auto Satellite Prog Rec mode.

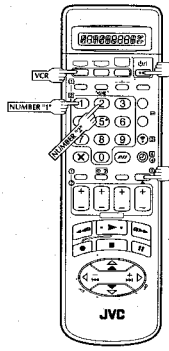
ATTENTION

- Be sure not to turn on the satellite tuner before the programme is executed; otherwise, the recorder will start recording when the satellite tuner's power is turned on.
- If you have connected another appliance other than a satellite tuner to the AV2 IN/DECODER connector, be sure not to engage the Auto Satellite Prog Rec mode; otherwise, the recorder will start recording when the connected appliance's power is turned on.
- Auto Satellite Prog recording and timer recording cannot be done at the same time.

NOTES:

- *Auto Satellite Prog recording is possible with the AV2 IN/DECODER connector only. (☞ pg. 44, 45)*
- *For timer programming of the satellite tuner, refer to the instruction manual of the satellite tuner.*
- *Auto Satellite Prog recording is not possible if your satellite tuner does not have a timer.*
- *The button's light blinks while Auto Satellite Prog recording is in progress.*
- *Pressing the recorder's ⏻/I button while Auto Satellite Prog recording is in progress turns off the recorder's power and disengage the Auto Satellite Prog Rec mode.*
- *If there are more than one satellite programme you wish to record with Auto Satellite Prog Recording, it is not possible to set the different tape speed per each; the tape speed selected in step 2 will be applicable to all the programmes for Auto Satellite Prog recording.*
- *The B.E.S.T. system (☞ pg. 24) does not work while Auto Satellite Prog recording is in progress.*
- *Just Clock (☞ pg. 36) does not work when the Auto Satellite Prog Rec mode is engaged.*
- *Depending on the type of satellite tuner, the recorder may not record a slight portion of the beginning of the programme or may record slightly longer than the actual length of the programme.*
- *If you engage the Auto Satellite Prog Recording mode when the satellite tuner's power is on, the recorder will not start Auto Satellite Prog recording even though the button's light blinks. When the satellite tuner shuts off once and is turned back on again, the recorder starts recording.*
- *When the Auto Satellite Prog Rec mode is engaged or the recorder's power is turned off after Auto Satellite Prog recording is finished, the recorder will not enter the Timer mode even though "AUTO TIMER" is set to "ON".*
- *After Auto Satellite Programme recording, the number of recorded programmes will not be displayed on the front display panel for the Instant ReView function (☞ pg. 17).*
- *You can also record a programme from your cable system in the same way if the system has a timer.*
- *When you press and hold the recorder's **REC LINK** button to engage the Auto Satellite Prog Rec mode, if the button does not light but instead blinks quickly even though your satellite tuner's power is off, Auto Satellite Prog Recording will not work properly with that satellite tuner*.*
  If this is the case, perform "Express Timer Programming" (☞ pg. 28) to timer-record a satellite programme.
  ** Some satellite tuners output signals even if the power is off. Auto Satellite Prog Recording is not possible with those satellite tuners.*

Remote Control Functions



Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to the remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1 REMOVE POWER SUPPLY

Unplug the mains power cord from the mains outlet.

2 SET REMOTE CONTROL CODE

Press and hold **VCR** on the remote control for over 2 seconds, press the **NUMBER** key "2" and then press **OK**.

3 RE-SUPPLY POWER

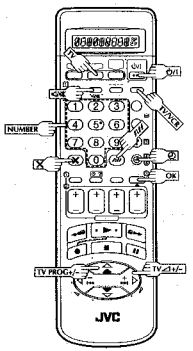
Plug the mains power cord back into the mains outlet.

4 TURN THE RECORDER ON

Press ⏻/I on the remote control. The recorder will now only respond to B code signals.

NOTE:

*To set the recorder back to respond to A code signals, repeat the same procedure as shown above except pressing **NUMBER** key "1" instead of "2" in step 2.*



Control Your TV Using Additional Buttons

Use the **NUMBER** keys, and the ***AV*** button, X button or ⏻ button to select the TV's channel.

- With televisions under Code 01, 02, 07, 10, 11, 14, 20, 22, 24, 25, 27, 33 or 35, the ***AV*** button corresponds to the 1-digit/2-digit entry switching button (often labelled –/--) of your TV's remote control.
- With televisions under Code 01, 28, 29 or 34, the X button corresponds to the 10 + button, and the ⏻ button corresponds to the 20 + button of your TV's remote control.

NOTE:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

TV Multi-brand Remote Control

Your remote control can operate the basic functions of your TV set, in addition to JVC TVs, other manufacturer's TVs can also be controlled.

Before you start . . .

- Turn off the TV using its remote control.

1 SET TV BRAND CODE

Refer to the chart below. Press and hold **TV** on the recorder's remote control for over 2 seconds, enter your TV's brand code using the **NUMBER** keys, then press **OK**.

Check if the TV's power goes on as it should. If it does, try other operations (☞ step 2).

- Once you have set the remote control to operate the TV, you don't have to repeat this step until you replace your remote control's batteries.
- JVC or SAMSUNG has more than one code. If the TV does not function with one code, try entering another.

2 OPERATE TV

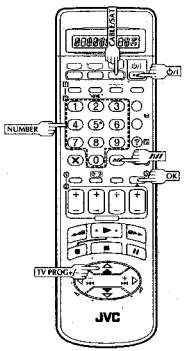
First, press **TV** to set the remote control to TV mode, then press the corresponding button: ⏻/I, **TV PROG +/–**, **TV/VCR**, **TV** ◿ **+/–** (Volume), ◁)ᴍᴜᴛᴇ (Muting), **NUMBER** keys.

- For some brands of TV, you must press **OK** after having pressed the **NUMBER** keys.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many other models, it may not work with your TV, or in some instances, may have limited function capability.

TV BRAND NAME	CODE
JVC	01, 23, 24, 25
BLAUPUNKT	19
BRANDT	26
FERGUSON	27
FINLUX	30
FUNAI	32
LG/GOLDSTAR	10
GRAETZ	28
GRUNDIG	19
HITACHI	10
ITT	28
LUXOR	28
MITSUBISHI	03
MIVAR	29
NEC	20
NOKIA	31
NORDMENDE	26
PANASONIC*	11
PHILIPS	02
SABA	26
SALORA	28
SAMSUNG	07, 12, 33, 34, 35
SELECO	28
SHARP	06
SONY	07
TELEAVIA	26
TELEFUNKEN	26
THOMSON	26
TOSHIBA	14



Satellite Tuner Multi-Brand Remote Control

Your remote control can operate the basic functions of your satellite tuner set. In addition to JVC satellite tuners, other manufacturer's satellite tuners can also be controlled.

Before you start . . .

- Turn off the satellite tuner using its remote control.

1 SET SATELLITE TUNER BRAND CODE

Refer to the chart below. Press and hold **CABLE/SAT** on the recorder's remote control for over 2 seconds, enter your satellite tuner's brand code using the **NUMBER** keys, then press **OK**.

Check if the satellite tuner's power goes on as it should. If it does, try other operations (☞ step 2).

- Once you have set the remote control to operate the satellite tuner, you don't have to repeat this step until you replace your remote control's batteries.
- Some satellite tuner brands have more than one code. If the satellite tuner does not function with one code, try entering another.

2 OPERATE SATELLITE TUNER

First, press **CABLE/SAT** to set the remote control to satellite tuner mode, then press the corresponding button: ⏻/I, **TV PROG +/–**, **NUMBER** keys.

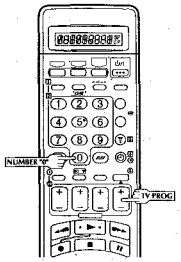
- For VIDEOWAY or some brands of satellite tuner, you must press ***AV*** after having pressed the **NUMBER** keys.
- The **NUMBER** buttons may not function with some satellite tuners.

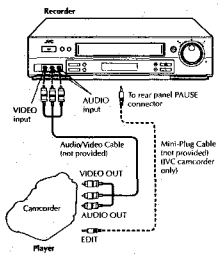
IMPORTANT

Although the provided remote control unit is compatible with JVC satellite tuners, as well as many other models, it may not work with your satellite tuner, or in some instances, may have limited function capability.

SATELLITE TUNER BRAND	CODE
JVC	72, 73
ASTRAD	60, 61, 62, 63
BT	72
CANAL +	81
FINLUX	68
GRUNDIG	64, 65
HIRSCHMANN	64
ITT	68
JERROLD	75
KATHREIN	70, 71
LUXOR	68
MASPRO	70
NOKIA	68
PACE	65, 67
PANASONIC	74
PHILIPS	66
RFT	69
SALORA	68
SIEMENS	64
SKYMASTER	69
VIDEOWAY	76
WISI	64

Edit From A Camcorder





You can use a camcorder as the source player and your video recorder as the recorder.

1 MAKE CONNECTIONS

Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's front panel AUDIO/VIDEO input connectors.

- When using a monaural camcorder, connect its AUDIO OUT connector to the AUDIO L input connector on your recorder.
- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling the recorder. Refer to the camcorder's instruction manual for operating procedure.

2 SET RECORDER'S INPUT MODE

Press **NUMBER** key "0" and/or **TV PROG** so that "F-1" appears in place of a channel position number.

3 SET EDIT MODE

See "Picture Control" on page 16.

4 START CAMCORDER

Engage its Play mode.

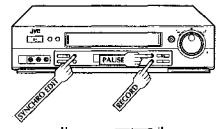
5 START RECORDER

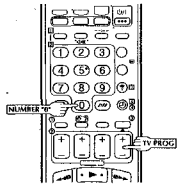
Engage its Record mode.

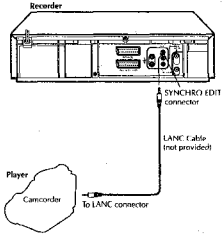
NOTES:

- *All necessary cables can be obtained from your dealer.*
- *You can also use another video recorder as the player instead of a camcorder.*
- *When you select EDIT to dub tapes in step 3, be sure to select AUTO (or NORM when B.E.S.T. is set to OFF) after you finish dubbing the tapes.*

Synchro Editing







The Synchro Editing function synchronizes the start of the playback and recording operations when starting an edit operation using a camcorder with LANC connector and your video recorder.

1 MAKE CONNECTIONS

Connect your recorder to camcorder (☞ pg. 36), and connect your recorder's SYNCHRO EDIT connector to the camcorder's LANC connector.

2 SET RECORDER'S INPUT MODE

Press **NUMBER** key "0" and/or **TV PROG** so that "F-1" appears in place of a channel position number.

3 SET EDIT MODE

See "Picture Control" on page 16.

4 LOCATE START POINT

Start playback of the tape in the camcorder, and pause playback when you find the point where you want to start editing. Press and hold **PAUSE** and press **RECORD** on your recorder so that the recorder enters the Record-Pause Mode.

5 START SYNCHRO EDITING

Press **SYNCHRO EDIT**.

6 PAUSE SYNCHRO EDITING

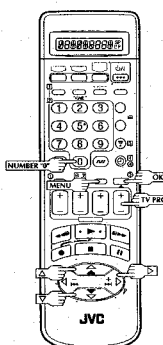
Press **SYNCHRO EDIT** again.

- Repeat steps 4 – 6 as necessary.

NOTES:

- *The Synchro Editing function may not work with the initial part of a camcorder tape.*
- *The Synchro Editing function cannot be used when using the JLIP function. (Pressing **SYNCHRO EDIT** cancels the JLIP function.)*
- *The Synchro Editing function may not work properly with some type of camcorder.*
- *When you select EDIT to dub tapes in step 3, be sure to select AUTO (or NORM when B.E.S.T. is set to OFF) after you finish dubbing the tapes.*

Edit To Or From Another Video Recorder



You can use your video recorder as the source player or as the recording deck.

1 MAKE CONNECTIONS

Connect the player's 21-pin SCART connector to the recorder's 21-pin SCART connector as illustrated on page 39.

A *When Using Your Video Recorder As The Source Player ...*
... connect its AV1 IN/OUT connector to the recording deck.

B *When Using Your Video Recorder As The Recording Deck ...*
... connect its AV2 IN/DECODER or AV1 IN/OUT connector to the source player.

2 SET RECORDING DECK'S INPUT MODE

Set to AUX. With this video recorder, press **NUMBER** key "0" and/or **TV PROG** to select "L-1" for the AV1 IN/OUT connector, or "L-2" for the AV2 IN/DECODER connector, depending on the connector being used.

- When using the AV2 IN/DECODER connector, make sure "AV2 SELECT" is set to "AV2" (☞ pg. 39).

3 SET EDIT MODE

See "Picture Control" on page 16.

4 START SOURCE PLAYER

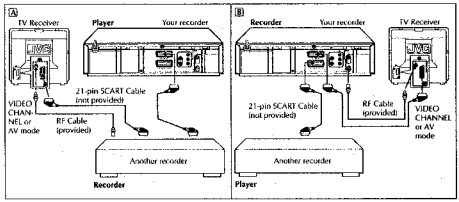
Engage its Play mode.

5 START RECORDING DECK

Engage its Record mode.

NOTES:

- *All necessary cables can be obtained from your dealer.*
- *When you use this recorder as the player for editing, be sure to set "D.S.D." to "OFF" before starting (☞ pg. 9).*
- *When you select EDIT to dub tapes in step 3, be sure to select AUTO or NORM when B.E.S.T. is set to OFF) after you finish dubbing the tapes.*

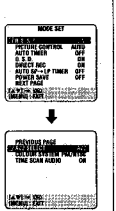


AV2 SELECT Setting

Set "AV2 SELECT" to the appropriate mode depending on the type of unit connected to the rear panel AV2 IN/DECODER connector of this recorder.

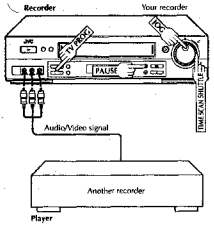
1 Press **MENU** to access the Main Menu screen.
2 Press △/▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.
3 Press △/▽ to move the highlight bar (pointer) to "AV2 SELECT".
4 Press **OK** or ▷ to select "AV2", "DECODER" or "SAT".
- a–AV2 : To use this recorder as the recording deck with the player connected to the AV2 IN/DECODER connector, or to use the satellite tuner connected to the AV2 IN/DECODER connector.
- b–DECODER : To use a decoder connected to the AV2 IN/DECODER connector.
- c–SAT : To view a satellite programme with the TV set while the recorder is in Timer mode, in Stop mode, recording or turned off. (☞ pg. 44)

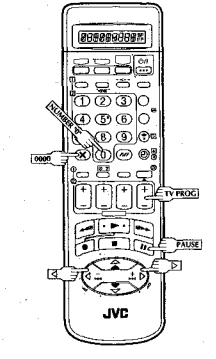
5 Press **MENU** to return to normal screen.



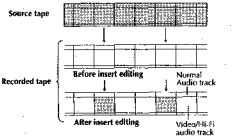
- If you have a decoder connected to the AV2 IN/DECODER connector, be sure to set "AV2 SELECT" back to "DECODER" after editing.
- If you're not connecting a decoder to the AV2 IN/DECODER connector, leave "AV2 SELECT" set to "AV2".
- The default setting is "AV2"; if the recorder's memory backup has expired due to a power cut or because the AC was removed from the recorder, "AV2" will be automatically selected when the power is restored to the recorder. If you are using a decoder, be sure to set "AV2 SELECT" back to "DECODER".

Insert Editing





Insert editing replaces part of the recorded scene with new material. Both the picture and Hi-Fi audio soundtrack are replaced with new ones, while the normal audio soundtrack remains unchanged. If you wish to change the normal audio track as well, use the audio dubbing function simultaneously. Use your video recorder as the recorder.



1 MAKE CONNECTIONS

Connect the player's VIDEO OUT and AUDIO OUT connectors to your recorder's VIDEO and AUDIO input connectors on the front panel.

2 SET INPUT MODE

Press **NUMBER** key **'0'** and/or **TV PROG** so that **'F-1'** appears in place of a channel number.

3 LOCATE END POINT

Load the recording cassette into your recorder, and play it back to determine the edit-out point (the end of the segment to be replaced) using the **TIME SCAN SHUTTLE** ring or the **JOG** dial or pressing **◁▷** and **PAUSE**.

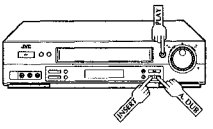
4 RESET THE COUNTER

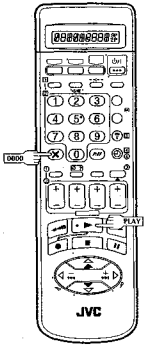
Press **0000** to change the counter display to **'0:00:00'**.

5 LOCATE START POINT

Determine the edit-in point (the beginning of the segment to be replaced) using the **TIME SCAN SHUTTLE** ring or the **JOG** dial or pressing **◁▷** and **PAUSE**.

- Be sure to engage the Still mode at the edit-in point.





6 ENGAGE INSERT EDITING

Press **INSERT**.

- Your recorder enters the Insert-Pause mode. **'▷'** and **'II'** light up on the front display panel.)
- The TV screen changes from the still picture to the input source you are going to record.

7 START EDITING

Load the source cassette and play back the segment that is to be inserted. When you reach the start of the section of the source tape that you wish to insert, press **PLAY** to start the tape in your recorder; Insert Editing begins at this point.

- **'▷'** and **'II'** are displayed on the front display panel.

8 END INSERT EDITING

At counter **'0:00:00'**, Insert Editing will stop automatically while the tape continues running in the Play mode. If you wish to stop Insert Editing before the specified edit-out point, press **0000**.

FOR AV INSERT EDITING

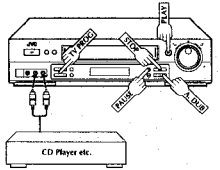
If you want to replace the picture, Hi-Fi audio soundtrack and normal audio soundtrack all at the same time...

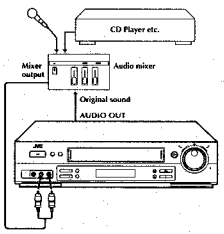
... In step 6 above, after you press **INSERT**, press **A. DUB** also. (**'▷'** and **'II'** blink and **'II'** lights up on the front display panel.)

NOTES:

- *Suitable leads can be obtained from your dealer.*
- *Insert editing is not possible with cassettes whose safety tab has been removed.*
- *When insert editing is performed on a tape that has been recorded on another video recorder, the inserted portion may appear distorted.*
- *In insert editing, the recording speed (SP/LP) is determined by the previous recording to be replaced. If the previous recording's speed changes within a single edit, the inserted picture will be distorted at the switching point.*
- *A small portion of the recording which precedes an insert edit may become erased.*
- *Insert Editing is also possible using the rear panel AV1 IN/OUT or AV2 IN/DECODER connector. When using these connectors, make sure to select the correct input mode in step 2.*

Audio Dubbing





NOTES:

- *When monitoring the sound during Audio Dubbing, the normal soundtrack is automatically selected. If you wish to hear the mixed sound (Hi-Fi + Normal soundtrack), press AUDIO on the remote control to select "Hi + Hi (L+R)+NORM" (☞ pg. 17).*
- *Audio dubbing stops automatically when the counter reaches "0:00:00", and the recorder enters the Play mode. Check the counter reading before dubbing.*
- *Audio dubbing is also possible using the rear panel AV1 IN/EJECT or AV2 IN/DECODER connector. When using these connectors, make sure to select the correct input mode in step 2.*
- *Audio dubbing cannot be performed on a cassette that has had its record safety tab removed.*
- *When playing back an audio-dubbed tape, press AUDIO on the remote control to select the soundtrack you wish to hear (☞ pg. 17).*

Audio dubbing replaces the normal audio sound of a previously recorded tape with a new soundtrack.

1 MAKE CONNECTIONS

Connect an audio component to the AUDIO L + R connectors on the recorder's front panel.

- When connecting monaural equipment, use only the recorder's AUDIO L connector.

2 SET INPUT MODE

Press **NUMBER** key "0" and/or **TV PROG** so that "F-1" appears in place of a channel number.

3 LOCATE START POINT

Press **PLAY** to start playback of the tape in your recorder, and press **PAUSE** when you find the point where you want to start dubbing.

4 ENGAGE AUDIO DUBBING

Press **A. DUB**.

- Your recorder enters the Audio Dubbing Pause mode. "▷" blinks, "▷" and "Ⓐ" light up on the front display panel.)
- To perform audio dubbing with audio mixing, press **AUDIO** on the remote control to select "Hi + Hi (L+R)*" at this point.
  - * Audio dubbing with audio mixing is not possible if you're using a monaural audio component, or if you don't have an audio mixer.

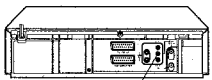
5 START DUBBING

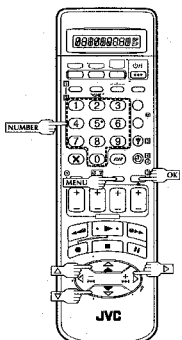
Engage the audio component's Play mode, then press **PLAY** to start the tape in your recorder. Audio dubbing begins at this point.

- "▷" blinks and "▷" is displayed on the front display panel.
- To stop dubbing temporarily, press **PAUSE**. Press **PLAY** to resume dubbing.

6 END AUDIO DUBBING

Press **STOP** to stop the tape in your recorder, and engage the audio component's Stop mode.





J Terminal (JLIP(Joint Level Interface Protocol) Connector)

The J Terminal is used to connect the recorder to a personal computer or similar device to allow computerized control of the recorder during editing and certain other operations.

Examples:

With the optional JLIP VIDEO CAPTURE BOX CV-CB3E:

- Enables Random Assemble Editing of up to 99 segments, using this recorder as the playback unit.
- Allows you to capture still images from the recorder into a personal computer.

For further details consult your nearest JVC dealer.

JLIP ID Number

Your recorder has its own JLIP ID number. This ID number must be unique when your recorder is connected to another device via its J terminal. The ID number is preset to "1" at the factory. You can change this number to any number between "1" and "99". If it is necessary to change the JLIP ID number perform the following steps.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS INITIAL SET SCREEN

Press △▽ to move the highlight bar (pointer) to "INITIAL SET", then press **OK** or ▷.

3 ACCESS JLIP ID NO. SET SCREEN

Press △▽ and move the highlight bar (pointer) to "JLIP ID NO. SET", then press **OK** or ▷.

4 SET JLIP ID NUMBER

Press **NUMBER** keys to enter the desired ID number.

5 RETURN TO NORMAL SCREEN

Press **OK**.

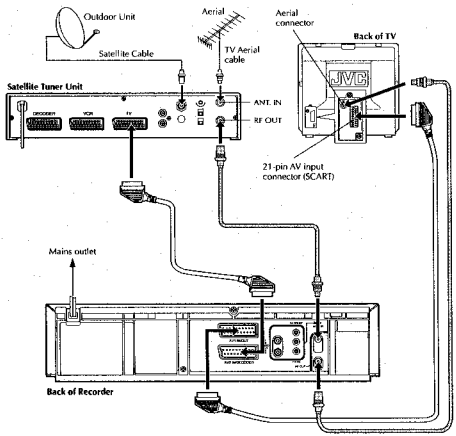
Connection To A Satellite Tuner

If you don't have a decoder . . .

Connect the satellite tuner to the video recorder's AV2 IN/DECODER connector, then connect the recorder's AV1 IN/OUT connector to the TV's 21-pin SCART connector.

NOTES:

- *Set "AV2 SELECT" to "AV2". (☞ pg. 39)*
- *You can use Automatic Satellite Program Recording function (☞ pg. 32) with this connection.*
- *To view a programme via the satellite tuner, select L-2 mode by pressing **NUMBER** keys and/or **TV PROG** so that "L-2" appears on the display panel.*
- *For details, refer to the instruction manual for the satellite tuner.*



IMPORTANT

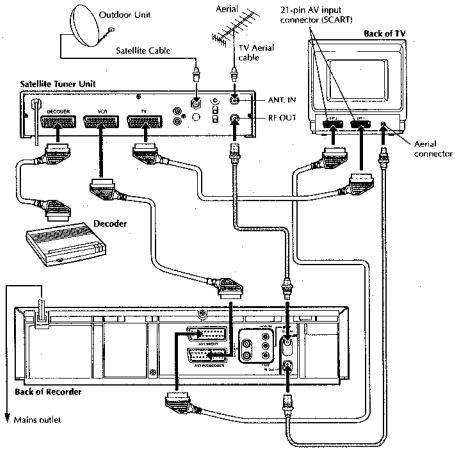
When you set "AV2 SELECT" to "SAT" (☞ pg. 39), it is possible to view a satellite broadcast with the TV set to its AV mode even if the recorder is in Timer mode, in Stop mode, recording, or turned off. When the recorder is in Stop mode or recording, press **TV/VCR** on the remote control to turn off the VCR indicator on the display panel.

If you have a decoder . . .

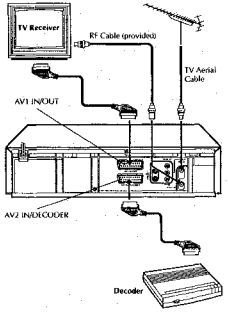
Connect the decoder to the satellite tuner's connector, AV1 IN/OUT connector to TV's connector, and AV2 IN/DECODER connector to the satellite tuner's connector. Then connect the satellite tuner and TV.

NOTES:

- *Set "AV2 SELECT" to "AV2". (☞ pg. 39)*
- *You can use Automatic Satellite Program Recording function (☞ pg. 32) with this connection.*
- *To view a programme via the satellite tuner, select L-2 mode by pressing **NUMBER** keys and/or **TV PROG** so that "L-2" appears on the display panel.*
- *To receive a scrambled broadcast, descramble the signal with the satellite tuner.*
- *For details, refer to the instruction manual for the satellite tuner and decoder.*



Connecting/ Using A Decoder



The AV2 IN/DECODER connector can be used as an input terminal for an external decoder (descrambler). Simply connect a decoder and you can enjoy the variety of programming that is available through scrambled channels.

1 SELECT INPUT MODE

Set "AV2 SELECT" to "DECODER". (☞ pg. 39)

2 CONNECT DECODER

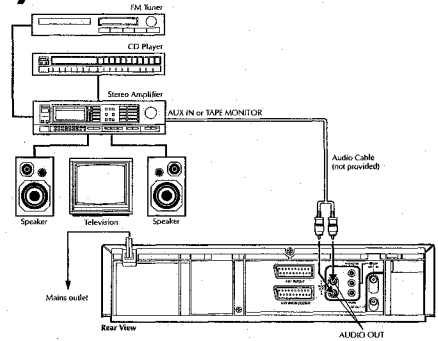
Connect your recorder's AV2 IN/DECODER connector to the decoder's Euroconnector using a 21-pin SCART cable.

3 SET TUNER

Perform the procedure as described in "When Receiving A Scrambled Broadcast" on page 51.

Connecting/ Using A Stereo System

These instructions enable you to connect your video recorder to your Hi-Fi stereo system (if you have one) and listen to the soundtrack through the stereo.



1 MAKE CONNECTIONS

Connect the AUDIO OUT L and R connectors on your video recorder to the AUX IN or TAPE MONITOR terminals on your stereo system's receiver or amplifier.

NOTES:

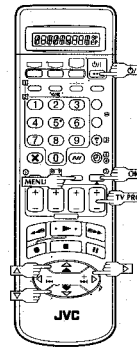
- *When connecting your recorder's audio output connectors to a stereo amplifier, make sure you connect L and R correctly.*
- *If stereo or bilingual TV broadcasts are receivable in your area, this recorder can record them independently of the TV set and play them back through the connected stereo system.*
- *When listening to sound through the connected stereo system, turn the TV's volume down completely.*

CAUTIONS:

- This recorder has a dynamic range of more than 80 dB with regards to its Hi-Fi audio capability. It is recommended that you check the maximum level if you are going to listen to the Hi-Fi audio signals through a stereo amplifier. A sudden surge in the input level to the speakers may damage them.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set as this can adversely affect the video playback picture.

Tuner Set

Turn on the TV and select the VIDEO channel (or AV mode).



IMPORTANT

Perform the following steps only if —
- Auto Channel Set has not been set correctly by Auto Set Up function or by Preset Download (☞ pg. 4, 6).
- you have moved to a different area or if a new station starts broadcasting in your area.

Your recorder needs to memorize all necessary stations in channel positions in order to record TV programmes. Auto Channel Set automatically assigns all receivable stations in your area to call them up by using the TV PROG buttons without going through any vacant channel.

Auto Channel Set

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS AUTO CH SET SCREEN

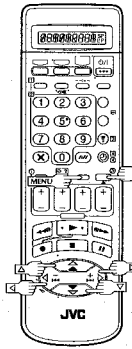
Press △▽ to move the highlight bar (pointer) to "AUTO CH SET", then press **OK** or ▷.

4 SELECT COUNTRY

Press △▽ to move the highlight bar (pointer) to your country's name, then press **OK** or ▷.

5 SELECT LANGUAGE

Press △▽ to move the highlight bar (pointer) to the language of your choice.



IMPORTANT

- In certain reception conditions, station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, when you timer-record a TV programme using SmartView, the recorder will record a TV programme of a different station. When programming the timer using SmartView, be sure to check whether the channel position on which your recorder receives the broadcasting station you wish to record is selected (☞ pg. 26, "SmartView Timer Programming").
- Your video recorder memorizes all detected stations even if reception of some of them is poor. In these cases picture quality may be poor. To delete these stations with an unacceptable picture ☞ "Delete A Channel" on page 51.

NOTES:

- *Fine tuning is performed automatically during Auto Channel Set. If you want to perform it manually, refer to page 54.*
- *If you perform Auto Channel Set when the aerial cable is not connected properly, "SCAN COMPLETED -NO SIGNAL-" appears on the screen in step 7. When this happens, make sure of the aerial connection and press OK. Auto Channel Set will take place again.*

6 PERFORM AUTO CHANNEL SET

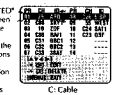
Press **OK** twice.

- You can set up the recorder's tuner also by Preset Download (☞ pg. 6).
- The Auto Set screen appears, and remains on screen while the recorder searches for receivable stations.

As Auto Channel Set progresses, the "■" mark on the screen moves from left to right.
Wait until the screen as shown in step 7 appears.

7 VIEW CONFIRMATION SCREEN

After "SCAN COMPLETED" is displayed on the screen for about 5 seconds, the Confirmation screen looking like the one to the right appears. The stations your recorder located appear on a Confirmation screen — channel positions (P.R), channels (CH) and station names (ID – ☞ pg. 53). The blueback screen and the programme currently being broadcast by the blinking station appear alternately for 8 seconds each.


P.R CH ID P.R CH ID
01 C24 BBC1 09 C32 BBC1
02 C26 ITV 10 C34 BA1
03 C28 BA1 11 C23 ITV
04 C31 BBC2 12 ----
05 C33 BBC2 13 ----
06 C22 ITV 14 ----
15 ---- ----
16 ---- ----
[MENU]: EXIT

C: Cable

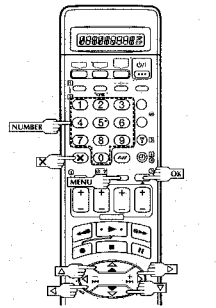
To view the next page, use the △▽ ◁▷ button on the remote control.

- The stations located in the selected country appear at the top of the list.
- The Guide Program numbers will also be set automatically during Auto Channel Set.

8 RETURN TO NORMAL SCREEN

Press **MENU**.

- Using the Conformation screen, you can skip or add channel positions, enter station names and perform other operations. Refer to pages 50 - 54 for the procedures.
- Depending on reception conditions, the stations may not be stored in order, and the station names may not be stored correctly.
- For information on scrambled broadcasts, refer to page 51.



Storing Channels Manually

Store channels that were not stored during Auto Set Up (☞ pg. 4). Preset Download (☞ pg. 6) or Auto Channel Set (☞ pg. 48).

1 ACCESS MAIN MENU

Press **MENU**.

2 ACCESS CONFIRMATION SCREEN

Press △▽ to move the highlight bar (pointer) to "MANUAL CH SET", then press **OK** or ▷. The Confirmation screen appears.

3 SELECT POSITION

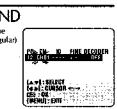
Press △▽ ◁▷ until an open position in which you want to store a channel begins blinking, then press **OK**. The Manual Channel Set screen appears.

(Ex.) To store in position 12.

The blueback screen and the programme currently being broadcast by the selected channel appear alternately for 8 seconds each.

4 SELECT BAND

Press △▽ to change the band between CH (regular) and CC (cable), then press ▷.



The blueback screen and the programme currently being broadcast by the selected channel appear alternately for 8 seconds each.

5 INPUT CHANNEL

Press the **NUMBER** keys to input the channel number you want to store.

- Input "0" before any single number entries.
- To input the registered station name (ID - ☞ pg. 53), press ▷ until "–––" (ID setting) begins blinking, then press △▽.
- For fine tuning adjustment, press ▷ until "+/–" begins blinking, then press △▽. While tuning, "+" or "–" appears.
- When storing a channel that sends scrambled broadcasts, press ▷ until "OFF" (Decoder setting) blinks, then press △▽ to set "DECODER" to "ON" ("OFF" is the default setting).
- When "AV2 SELECT" is set to "AV2", the "DECODER" setting cannot be changed (☞ pg. 39).

6 ENTER NEW CHANNEL INFORMATION

Press **OK** and the Confirmation screen appears.

- Repeat steps 3 through 5 as necessary.

7 CLOSE CONFIRMATION SCREEN

Press **MENU**.

- To change positions, see "Change Station Channel Position" (☞ pg. 51).
- If you wish to set station names other than the ones registered in your recorder, ☞ "Set Stations (B)" on page 52.

ATTENTION

Guide Program numbers are not set when channels are stored manually. If an attempt is made at timer programming with SmartView in this state, the "GUIDE PROG SET" screen appears; set the Guide Program numbers on this screen. ☞ "ATTENTION – Regarding Guide Program Number Set" on pg. 27.
Or perform "Guide Program Number Set" (☞ pg. 58).

Delete A Channel

Perform steps 1 and 2 of "Storing Channels Manually" on page 50 to access the Confirmation screen before continuing.

1 SELECT ITEM

Press △▽ ◁▷ until the item you want to delete begins blinking.

2 DELETE CHANNEL

Press **X**.

- The item directly beneath the cancelled one moves up one line.
- Repeat steps 1 and 2 as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Change Station Channel Position

Perform steps 1 and 2 of "Storing Channels Manually" on page 50 to access the Confirmation screen before continuing.

1 SELECT ITEM

Press △▽ ◁▷ until the item you want to move begins blinking. Then press **OK** and the station name (ID) and its channel (CH) number begin blinking.

2 SELECT NEW POSITION

Press △▽ ◁▷ to move the station to the new channel position, then press **OK**.

Example: If you moved the station in position 4 to position 2, the stations originally in positions 2 and 3 each move down one space.

- Repeat steps 1 and 2 as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

NOTE:

The characters available for the station name (ID) are A–Z, 0–9, -, ✱, +, — (spaced maximum of 4).

When Receiving A Scrambled Broadcast

1 SELECT DECODER MODE

Set "AV2 SELECT" to "DECODER" (☞ pg. 39).

2 ACCESS CONFIRMATION SCREEN

Perform steps 1 and 2 of "Storing Channels Manually" on page 50.

3 SELECT POSITION

Press △▽ ◁▷ to select the channel position broadcasting scrambled programmes, then press **OK** twice.

4 CHANGE DECODER SETTING

Press ▷ until "OFF" (decoder setting) begins blinking, and set it to "ON" by pressing △▽.

5 RETURN TO CONFIRMATION SCREEN

Press **OK**.

- Repeat steps 3 through 5 as necessary.

6 CLOSE CONFIRMATION SCREEN

Press **MENU**.

ATTENTION

If channel positions are changed or deleted, the Guide Program numbers that have been set are reset.

- Example 1: If a channel is deleted, all the Guide Program numbers are reset.
- Example 2: If a channel is changed from position 4 to position 2, the Guide Program numbers above position 4 are reset.
- Example 3: If a channel is changed from position 4 to position 6, the Guide Program numbers above position 6 are reset.

* In Examples 2 and 3, if the channel is moved to position 10 before **OK** is pressed, the Guide Program numbers above position 10 are reset.
If an attempt is made at timer programming with SmartView in this state, the "GUIDE PROG SET" screen appears; set the Guide Program numbers on this screen. ☞ "ATTENTION – Regarding Guide Program Number Set" on pg. 27.
Or perform "Guide Program Number Set" (☞ pg. 58).

Set Stations (A)

Set station names that are registered in your recorder.

Perform steps 1 and 2 of "Storing Channels Manually" on page 50 to access the Confirmation screen before continuing.

1 SELECT ITEM

Press △▽ ◁▷ until the item you want begins blinking.

2 ACCESS MANUAL CHANNEL SET SCREEN

Press **OK** twice.

3 SELECT NEW STATION

Press ▷ until the station name (ID) begins blinking, then press △▽ until the new station's name (ID) you want to store begins blinking.
Registered station names (☞ pg. 53) appear as you press △▽.

4 SWITCH STATIONS

Press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **4** as necessary.

5 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Set Stations (B)

Set station names other than the ones registered in your recorder.

Perform steps 1 and 2 of "Storing Channels Manually" on page 50 to access the Confirmation screen and then perform step 1 and 2 of "Set Stations (A)" on the left before continuing.

1 SELECT STATION NAME CHARACTER

Press ▷ until the first letter of the station name begins blinking.

2 ENTER NEW CHARACTER

Press △▽ to cycle through the characters (A–Z, 0–9, –, *, +, = (space)) and stop when the desired character is indicated, then press ▷ to enter. Enter the remaining characters the same way (maximum of 4).
After entering all characters, press **OK**.

- The Confirmation screen appears.
- If you make a mistake, press ◁ until the incorrect character begins blinking. Then enter the correct character by pressing △▽.

3 CLOSE CONFIRMATION SCREEN

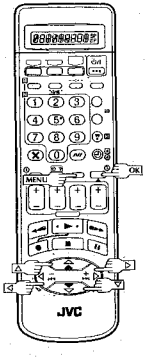
Press **MENU**.

TV Station And ID List

ID*	STATION NAME
1000	TV1000
3SAT	3SAT
ADLT	ADULT
ANT3	ANTENA3
ARD	ARD
ARTE	ARTE
BBC	BBC GROUP
BBC1	BBC1
BBC2	BBC2
BR3	BAYERN3
C+	CANAL PLUS
C1	PORTUGUSES
CANS	CANALES
CANV	KETNET CANVAS
CH4	CHANNEL4
CH5	CHANNEL5
CHLD	CHILD
CINE	CINEMA
CLUB	TELECLUB
CMT	CMT
CNN	CNN
CSUR	ANTOALUCIA
DISC	DISCOVERY
DR	DR TV
DRS	DRS
DSF	DSF
ETB1	ETB1
ETB2	ETB2
EURO	EURONEWS
EUSP	EUROSPORTS
FEMM	FEMMAN
FILM	FILM
FNET	FILMNET
FR2	France2
FR3	France3
GALA	GALAVISION
HR3	HESSEN3
INFO	INFOKANAL
ITA1	ITALIA1
ITA7	ITALIA7
ITV	ITV
JSTV	JSTV
KA2	KA2
KAB1	KABEL1
KAN2	KANAL2
LOCA	LOCAL
M6	M6
MBC	MBR
MCM	MCM
MDR	MDR
METVE	METVIE
MTV	MTV
MTV3	MTV3
N3	NORD3
N-TV	N-TV
NBC	NBC SUPER
NDR3	NDR3
NED1	NED1
NED2	NED2
NED3	NED3
NEWS	
NICK	NICKELODEON
NRK	NRK
NRK2	NRK2
ODE	ODEON
ORF1	ORF1

ID*	STATION NAME
ORF2	ORF2
ORF3	ORF3
OWL3	OWL3
PREM	PREMIERE
PRO7	PRO7
RAI1	RAI1
RAI2	RAI2
RAI3	RAI3
RTL4	RETE4
21	TELE21
RTBF	RTBF1 or 2
RTL	RTL
RTL2	RTL2
RTL4	RTL4
RTL5	RTL5
RTP	RTP
S4	SCHWEIZ4
SAT1	SAT1
SBS	SBS
SHOW	SHOW
SOC	SOCIEDADE
SKY	SKY CHANNEL
SKYN	SKY NEWS
SPRT	SPORT
SRTL	SUPER RTL
STAR	STAR TV
SVT1	SVT1
SVT2	SVT2
SWR	SUEDWEST3
TCC	TCC
TELE	TELE5
TEL5	TELE5
TF1	TF1
TM3	TM3
TMC	TELEMONTECARLO
TNT	TNT INT
TRT	TRT INT
TSI	TSI
TSR	TSR
TV1	BRTN TV1
TV2	TV2
TV3	TV3
TV4	TV4
TV5	TV5
TV6	TV6
TVE1	TVE1
TVE2	TVE2
TVG	TV GALICIA
TVI	TV INDEPENDENT
TVN	TV NORGE
VCR	VIDEO
VERO	VERONICA
VH-1	VH-1
VIVA	VIVA
VIVA2	VIVA2
VMTV	VIDEO MUSIC
VOX	VOX
VT4	VT4
VTM	VTM
WDR1	West1
WDR3	West3
YLE1	YLE1
YLE2	YLE2
ZDF	ZDF
ZTV	ZTV

* The "ID" abbreviation is what is shown on-screen in lieu of the station name. The "ID" abbreviation is listed in the Confirmation screen and is displayed on the TV screen when the recorder is tuned to a different station.



Fine-Tuning Channels Already Stored

Perform steps 1 and 2 of "Storing Channels Manually" on page 50 to access the Confirmation screen before continuing.

1 SELECT CHANNEL TO FINE-TUNE

Press △▽ until the channel you want to tune begins blinking.

2 ACCESS MANUAL CHANNEL SET SCREEN

Press **OK** twice. The Manual Channel Set screen appears.

3 PERFORM TUNING

Press ▷ until "+/-" begins blinking, then press △▽ until the picture is its clearest. Then press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **3** as necessary.

4 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Video Channel Set

Video Channel (RF Output Channel) is the channel on which your TV receives picture and sound signals from the video recorder through the RF cable.

IMPORTANT

Perform the following steps only if —
- interference appears in the TV picture after you have moved to a different area or a new station has started broadcasting in your area,
- you change the connection between your recorder and TV from RF connection to AV connection, or vice versa.

If you have connected the video recorder to your TV via both the provided RF cable and a 21-pin SCART cable (AV connection), since you do not need the video channel you have to set the video channel to off.

If you have connected the video recorder to your TV via the RF cable only (RF connection), you have to set the correct video channel.

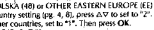
Before performing the following steps, make sure the recorder's power is off and there is no cassette inserted in the recorder.

1 ACCESS VIDEO CHANNEL SET MODE

Hold down **STOP (■/⏏)** on the recorder until the display panel shows the following.

2 SET RF OUTPUT SYSTEM

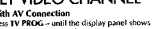
The blinking number on the display indicates the RF output system of your country. If you have selected MAGYARORSZAG (36), CESKA REPUBLIKA (42), POLSKA (48) or OTHER EASTERN EUROPE (EE) for the country setting (pg. 4, 8), press △▽ to set to "2". For other countries, set to "1". Then press **OK**.
(1: B/G, 2: D/K)



3 SET VIDEO CHANNEL

With AV Connection

Press **TV PROG.** – until the display panel shows "1OUT– –" (or "2OUT– –").

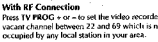


- Now the video channel is set to off.

With RF Connection

Press **TV PROG** + or – to set the video recorder to a vacant channel between 22 and 69 which is not occupied by any local station in your area.

(Ex.) If channel 50 is available in your area



Then set your TV to UHF channel 50.

- If the two vertical white bars appear clearly on the screen as shown to the right, go to step **4**.
- If the two vertical white bars do not appear clearly, re-set the video recorder to another vacant channel and try again.

NOTES:

- *If you set the video recorder to a channel which is occupied by a local station or has neighbouring channels that are occupied by local stations, the picture reception quality will be affected and some interference noise will appear on the TV screen. Be sure to select a vacant channel which has no broadcast on neighbouring channels.*
- *If you cannot obtain the two vertical white bars clearly with any channel between 22 and 69, consult your JVC dealer.*

4 EXIT VIDEO CHANNEL SET MODE

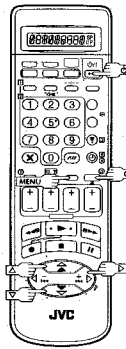
Press **OK** on the remote control.

With AV Connection:
To view picture signals from the video recorder, set your TV to its AV mode.

With RF Connection:
The channel on which the screen in step 3 appears clearly is your video channel.
To view picture signals from the video recorder, set your TV to the Video Channel.

Clock Set

Turn on the TV and select the VIDEO channel (or AV mode).



Just Clock
The Just Clock function provides accurate time keeping through automatic adjustments at regular intervals, by reading data from a PDC signal.
The Just Clock option can be set "ON" or "OFF" at the Clock Set screen (the default setting is "OFF"). Press **OK** until the Just Clock setting begins blinking, then press △▽ to change the setting.

IMPORTANT: If you turn off Just Clock, the accuracy of your recorder's built-in clock may be reduced, which could adversely effect timer recording. We recommend you to keep Just Clock on. In cases where the clock setting data from a PDC signal is incorrect, however, you are advised to keep Just Clock set to "OFF".

IMPORTANT

If you performed Auto Set Up (☞ pg. 4), Preset Download (☞ pg. 46) or Auto Channel Set (☞ pg. 48), without ever having set the clock previously, the recorder's built-in clock is also set automatically.
Perform the following steps only if —
— Auto Clock Set has not been performed correctly by Auto Set Up, Preset Download or Auto Channel Set.
or
— the recorder's memory backup has expired.
or
— you want to change Just Clock setting (☞ "Just Clock" in the left column).

1 TURN THE RECORDER ON

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS INITIAL SET SCREEN

Move the highlight bar (pointer) to "INITIAL SET" by pressing △▽, then press **OK** or ▷.

4 ACCESS CLOCK SET SCREEN

Move the highlight bar (pointer) to "CLOCK SET" by pressing △▽, then press **OK** or ▷. The Clock Set screen appears.

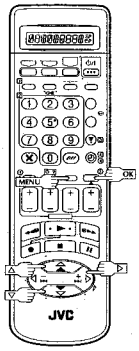
NOTE:

When you have selected MAGYARORSZAG (36), CESKA REPUBLIKA (42), POLSKA (48) or OTHER EASTERN EUROPE (EE) for the country setting (☞ pg. 4, 8), you cannot use Just Clock function. Skip steps 6 and 7 on page 57.

5 SET DATE AND TIME

Press △▽ to set the time, then press **OK** or ▷. The "date" display begins blinking. Repeat the same procedure to set the date and year.

- When you set the time, press and hold △▽ to change the time by 30 minutes.
- When you set the date, press and hold △▽ to change the date by 15 days.



6 SET JUST CLOCK

The default setting is "OFF". Set as desired by pressing △▽, then press **OK** or ▷.

- For the just clock function, ☞ "Just Clock" on page 56.
- If you set to "OFF", you can disregard the next step as you won't be able to receive regular clock adjustments.

7 SET CLOCK DATA SOURCE CHANNEL POSITION

The recorder is preset to receive clock setting and adjustment data from channel position 1. Press △▽ to set the channel position to the number representing the station transmitting clock setting data, then press **OK** or ▷.

8 START CLOCK OPERATION

Press **MENU**.

NOTES:

- *Just Clock (when set to "ON") adjusts the recorder's built-in clock every hour, except for 23:00, 0:00, 1:00 and 2:00.*
- *Just Clock is not effective when . . .*
  - *– the recorder's power is on,*
  - *– the recorder is in the Timer mode,*
  - *– a difference of more than 3 minutes exists between the built-in clock's time and the actual time,*
  - *– the recorder is in the Auto Satellite Prog Rec mode (☞ pg. 32),*
  - *– the recorder is in the Power Save mode (☞ pg. 10).*
- *If Just Clock is set to "ON", the recorder's clock is automatically adjusted at the start/end of Summer Time.*
- *Just Clock may not function properly depending on the reception condition.*

SHOWVIEW Setup

IMPORTANT

Normally, Auto Set Up (☞ pg. 4), Preset Download (☞ pg. 6) or Auto Channel Set (☞ pg. 48) sets the Guide Program Numbers automatically. You need to set the Guide Program Numbers manually only in the following cases.

- *When timer-programming with SHOWVIEW, the channel position, where the station you wish to record is received on your recorder, is not selected or when you add a channel after Auto Set Up or Auto Channel Set has taken place.*
  — Set the Guide Program Number for that station manually.
- *When you delete a channel or change channel positions manually after Auto Set Up or Auto Channel Set has taken place.*
  — Set the Guide Program Numbers for all the receivable stations manually.
- *When you wish to timer-record a satellite programme with SHOWVIEW.*
  — Set the Guide Program Numbers for all satellite broadcasts received on your satellite tuner.

Turn on the TV and select the VIDEO channel (or AV mode).

Guide Program Number Set

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS INITIAL SET SCREEN

Press △▽ to move the highlight bar (pointer) to "INITIAL SET", then press **OK** or ▷.

3 ACCESS GUIDE PROG SET SCREEN

Press △▽ to move the highlight bar (pointer) to "GUIDE PROG SET", then press **OK** or ▷.

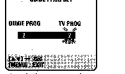
4 ENTER GUIDE PROG NUMBER

Press △▽ or **NUMBER** keys to enter the Guide Program number for the desired station as shown in the TV listings. Then press **OK** or ▷.

(Ex.) When inputting the Guide Program number 5 for ZDF.

5 ENTER RECEIVING CHANNEL POSITION NUMBER

Press △▽ or **NUMBER** keys to input the number of the recorder's channel position on which the Guide Program number's broadcast is received. Then press **OK** or ▷.



(Ex.) If ZDF is received on channel position 2.

- **If the satellite broadcast is received on your recorder's auxiliary channel "L-2", select "L-2" for the channel position.**
- Repeat steps 4 and 5 as necessary.

6 RETURN TO NORMAL SCREEN

Press **MENU**.

Guide Program Number

"Guide Program (GUIDE PROG) number" refers to the assigned TV station numbers, according to broadcast area, for SHOWVIEW timer recording. The Guide Program numbers can be found in most TV listings.

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your video recorder off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. No power is applied to the recorder.	• The mains power cord is disconnected.	Connect the mains power cord.
2. The clock is functioning properly, but the recorder cannot be powered.	• "⏻" is displayed on the display panel with Auto Timer set to "OFF".	Press the ⏻ button to turn the "⏻" indicator off.
3. The remote control won't function.	• The batteries are discharged.	Replace the dead batteries with new ones.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape does not run during recording.	• "▯▯" is displayed on the display panel.	Press **PLAY** to turn the "▯▯" indicator off.
2. The tape will not rewind or fast-forward.	• The tape is already fully rewound or fast-forwarded.	Check the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The playback picture does not appear while the tape is running.	• If you're using the RF OUT connection . . . . . . the TV receiver's channel selector is not set to the VIDEO channel. . . . the recorder's VIDEO channel has not been correctly set. • If you're using the AV connection, the TV receiver is not set to the AV mode.	If you are using the RF OUT connection . . . . . . set the TV receiver to the VIDEO channel. . . . perform "Video Channel Set". (☞ pg. 55) If you are using the AV connection, set the TV to its AV mode.
2. Noise appears during visual search.	• This is normal during visual search other than TimeScan.	
3. Noise appears during normal playback.	• The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 15)
4. The playback picture is blurred or interrupted while TV broadcasts are clear.	• The video heads may be dirty.	Consult your JVC dealer.
5. Breaks are noticeable in Hi-Fi soundtrack.	• Automatic tracking is engaged.	Engage and adjust tracking manually. (☞ pg. 15)

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	• There is no cassette loaded, or the cassette loaded has had its Record Safety tab removed.	Insert a cassette, or using adhesive tape, reseal the slot where the tab was removed.
2. TV broadcasts cannot be recorded.	• "L-1", "L-2" or "F-1" has been selected as the input mode.	Set to the desired channel.
3. Tape-to-tape editing is not possible.	• The source (another video recorder, camcorder) has not been properly connected. • All necessary power switches have not been turned on. • The input mode is not correct.	Confirm that the source is properly connected. Confirm that all units' power switches are turned on. Set the input mode to "L-1", "L-2" or "F-1".
4. Camcorder recording is not possible.	• The camcorder has not been properly connected. • The input mode is not correct.	Confirm that the camcorder is properly connected. Set the input mode to "L-1", "L-2" or "F-1".

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	• The clock and/or the timer have been set incorrectly. • The timer is not engaged.	Re-perform the clock and/or timer settings. Press ⏲ and confirm that "⏲" is displayed on the display panel.
2. Timer programming is not possible.	• Timer recording is in progress.	Timer programming can't be performed while a timer recording is in progress. Wait until it finishes.
3. "⏲" and "REC" on the display panel won't stop blinking.	• The timer is engaged but there's no cassette loaded.	Load a cassette with the Record Safety tab intact, or cover the hole using adhesive tape.
4. The cassette is automatically ejected, and "⏲" and "REC" on the display panel won't stop blinking.	• The loaded cassette has had its Record Safety tab removed.	Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the Record Safety tab intact.
5. "⏲" blinks for 10 seconds and the Timer mode is disengaged.	• ⏲ has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly.	Check the programmed data and re-program as necessary, then press ⏲ again.
6. The cassette is automatically ejected, the power shuts off and "⏲" and "REC" won't stop blinking.	• The end of the tape was reached during timer recording.	The programme may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire programme.
7. ShowView does not timer-record properly.	• The recorder's channel positions have been set incorrectly.	Refer to "Guide Program Number Set" and re-perform the procedure (☞ pg. 58).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Whistling or howling is heard from the TV during camcorder record-ing.	• The camcorder's microphone is too close to the TV. • The TV's volume is too high.	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
2. When scanning channels, some of them are skipped over.	• Those channels have been desig-nated to be skipped.	If you need the skipped channels, restore them (☞ pg. 50).
3. The channel cannot be changed.	• Recording is in progress.	Press **PAUSE** to pause the recording, change channels, then press **PLAY** to resume recording.
4. Channel settings that were made manually seem to have changed or disappeared.	• After the manual settings were made, Auto Channel Set was performed.	Perform manual setting again.
5. No channels are stored in the recorder's memory.	• The TV aerial cable was not connected to the recorder when Auto Set Up was performed.	Connect the TV aerial cable to the recorder properly and turn off the recorder power once, then turn the recorder power back on again. The recorder will try Auto Set Up again (☞ pg. 4).
6. The remote control won't operate the TV or satellite tuner.	• The remote control brand setting is incorrect.	Re-set the remote control to the correct brand (☞ pg. 14, 35).

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

Q. Can the video recorder indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

Q. Sometimes, during Index Search, the video recorder can't find the programme I want to see. Why not?
A. There may be index codes too close together.

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

Q. Can the video recorder indefinitely remain in the Record-Pause mode?
A. No. The video recorder goes to its Stop mode automatically after 5 minutes to protect the heads.

Q. What happens if the tape runs out during recording?
A. The video recorder automatically rewinds it to the beginning.

TIMER RECORDING

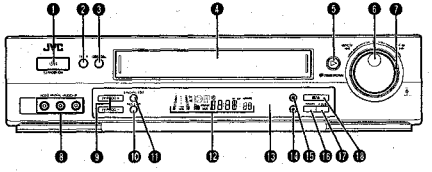
Q. "⏲" and "⏲" remain lit on the display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

Q. Can I programme the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the programme or tape you're viewing can be heard.

Q. Is it possible to timer-record a TV programme broadcast in 2000?
A. Yes, it is possible.

ATTENTION
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the recorder off and unplug the mains power cord. Then plug it in again and turn the recorder on. Take out the cassette. After checking the cassette, operate the unit as usual.

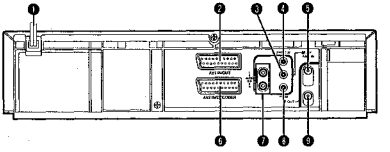
FRONT VIEW



Attach the provided connector cover when you do not use the front panel connectors.

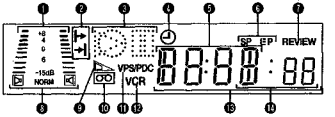
1. STANDBY/ON ⏻/I Button ☞ pg. 4
2. TIMER Button ☞ pg. 27, 29
3. REVIEW Button ☞ pg. 17
4. Cassette Loading Slot
5. PLAY Button ☞ pg. 13
6. JOG Dial ☞ pg. 14
7. TIME SCAN SHUTTLE Ring ☞ pg. 13, 14, 18
8. VIDEO/AUDIO Input Connectors ☞ pg. 36, 40
9. TV PROG +/– Buttons ☞ pg. 20
10. REC LINK Button ☞ pg. 32
11. SYNCHRO EDIT Button ☞ pg. 37
12. Display Panel ☞ pg. 63
13. Infrared Beam Receiving Window
14. RECORD Button ☞ pg. 20
15. PAUSE Button ☞ pg. 14
16. INSERT Button ☞ pg. 40
17. A. DUB (Audio Dubbing) Button ☞ pg. 42
18. STOP/EJECT Button ☞ pg. 13

REAR VIEW



1. Mains Power Cord ☞ pg. 3
2. AV1 IN/OUT Connector ☞ pg. 3, 37, 38, 44 – 46
3. J terminal (JLIP (Joint Level Interface Protocol) Connector) ☞ pg. 43
4. SYNCHRO EDIT Connector ☞ pg. 37
5. ANT. IN Connector ☞ pg. 3
6. AV2 IN/DECODER Connector ☞ pg. 38, 44 – 46
7. AUDIO OUT (L/R) Connectors ☞ pg. 47
8. Remote PAUSE Connector ☞ pg. 36
9. RF OUT Connector ☞ pg. 3

DISPLAY PANEL

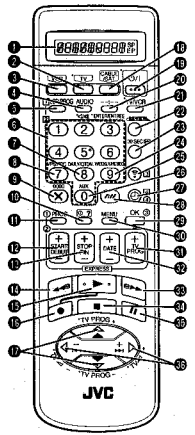


1. B.E.S.T. Picture System Display ☞ pg. 24
   Audio Level Indicator ☞ pg. 23
2. Programme Time Indicators ☞ pg. 28
3. Symbolic Mode Indicators

PLAY: FF/REW VARIABLE SHUTTLE SEARCH:	▷	STILL: SLOW:	▷II
		RECORD:	○
		RECORD PAUSE:	○II
AUDIO DUBBING:			
AUDIO DUBBING PAUSE:			II
INSERT:			
INSERT PAUSE:			II
AUDIO DUBBING INSERT:			
AUDIO DUBBING INSERT PAUSE:			II

4. "Timer" Indicator ☞ pg. 27, 29
5. Channel/Clock Display ☞ pg. 7
6. Tape Speed Indicators ☞ pg. 20
   ** EP is only for NTSC playback*
7. Instant REVIEW Indicator ☞ pg. 17
8. Audio Mode Indicator ☞ pg. 17
9. Tape Remaining Time Indicator ☞ pg. 21
10. "Cassette Loaded" Mark
11. VPS/PDC Indicator ☞ pg. 27, 29
12. VCR Indicator ☞ pg. 21
13. Counter/Remain Display
14. Mode Display (L-1, L-2 or F-1)

REMOTE CONTROL



1. LCD Panel ☞ pg. 26, 65
2. TV Button ☞ pg. 34, 65
3. VCR Button ☞ pg. 33, 65
4. AUDIO Button ☞ pg. 17
   (TV Muting) Button ☞ pg. 34
5. LCD PROG Button ☞ pg. 26
6. NUMBER Keys ☞ pg. 20, 26
7. DAILY Button ☞ pg. 27, 29
8. VPS/PDC Button ☞ pg. 27, 29
9. ✕ Button ☞ pg. 26, 30
   0000 Button ☞ pg. 21, 41
10. ⏲ Button ☞ pg. 30
11. PROG Button ☞ pg. 26
12. START +/– Button ☞ pg. 28
13. STOP +/– Button ☞ pg. 28
14. Rewind (REW) Button ☞ pg. 13, 15
15. Play Button ☞ pg. 13
16. Record Button ☞ pg. 20
17. △▽ Button ☞ pg. 4
    TV PROG +/– ☞ pg. 34
18. CABLE/SAT Button ☞ pg. 35, 65
19. STANDBY/ON ⏻/I Button ☞ pg. 4
20. – – : – – Button ☞ pg. 21
21. TV/VCR Button ☞ pg. 21, 34
22. REVIEW Button ☞ pg. 17
23. 30 SEC Button ☞ pg. 15
24. WEEKLY Button ☞ pg. 27, 29
25. ⤒ Button ☞ pg. 26
26. AUX Button ☞ pg. 36
27. ⏲ Button ☞ pg. 27, 29
28. (Auto Tracking) Button ☞ pg. 15
    SP/LP Button ☞ pg. 20
29. OK Button ☞ pg. 5
30. MENU Button ☞ pg. 8
31. TV PROG +/– Button ☞ pg. 20
32. DATE +/– Button ☞ pg. 28
33. Fast Forward (FF) Button ☞ pg. 13, 15
34. Stop Button ☞ pg. 13, 20
35. Pause Button ☞ pg. 14
36. ◁ ▷ Button ☞ pg. 14, 18
    TV ◿ +/–Button ☞ pg. 34

Buttons with a small dot on the left side of the name can also be used to operate your TV. (☞ pg. 34)

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets and satellite tuners of JVC and other brands. (☞ pg. 14, 35)

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

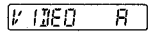
NOTES:

- *When inserting the batteries, be sure to insert in the correct directions as indicated under the battery cover.*
- *If the remote control doesn't work properly, remove its batteries, wait a short time, replace the batteries and then try again.*

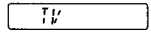
Remote Control LCD

The remote control can operate not only the video recorder but also some of your TV and satellite tuner's functions. The LCD indicates which of these (VIDEO, TV or CABLE/SAT) the remote control can currently operate. When you first purchase the remote control, or after you have just replaced the batteries, VIDEO A (A code) is selected.

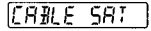
1 To operate your video recorder, first press the **VCR** button to set the remote control to the Video mode (☞ pg. 33).



2 To operate your TV, first press the **TV** button to set the remote control to the TV mode (☞ pg. 34).



3 To operate your satellite tuner, first press the **CABLE/SAT** button to set the remote control in the Satellite tuner mode (☞ pg. 35).



NOTES:

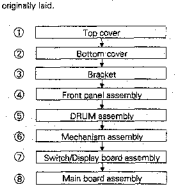
Even if "TV" is displayed on the LCD, the following operations can be performed without switching the mode.

- *Basic operations for the recorder*
  After an operation is completed, "TV" reappears on the LCD.
- *Express Timer Programming and SmartView Timer Programming operations*
  To perform a TV operation again, switch to TV mode first.
- *Accessing main menu*
  To perform a TV operation again, switch to TV mode first.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP/LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1), (S2)	
②	BOTTOM COVER	D2	(S3), 7(L1)	
③	BRACKET	D3	2(S4)	
④	FRONT PANEL ASSEMBLY	D4	7(L2), CN3012(WR1)	<NOTE 1> <NOTE 2>

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.

(2) Part name to be removed or installed

(3) Fig.No. showing procedure or part location

(4) Identification of part to be removed,unhooked,unlocked, released,unplugged,untemped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, CNxx(WRxx) = Remove the wire (WRxx) from the connector (CNxx).

NOTE: *The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.*

(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP/LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1), (S2)	
②	BOTTOM COVER	D2	(S3), 7(L1)	
③	BRACKET	D3	2(S4)	
④	FRONT PANEL ASSEMBLY	D4	7(L2), CN3012(WR1)	<NOTE 1> <NOTE 2>
⑤	DRUM ASSEMBLY	D5	3(S5), CN11(WR2), CN1(WR3)	<NOTE 2>
⑥	MECHANISM ASSEMBLY	D6	2(S6),2(S7),2(L3), CN10(WR4)	<NOTE 2> <NOTE 3>
⑦	SWITCH/DISPLAY BOARD ASSEMBLY	D7	7(L4), (L5), CN7001(WR5), CN7191(WR6), REC SAFETY BOARD ASSY	<NOTE 2> <NOTE 4>
⑧	MAIN BOARD ASSEMBLY	D8	2(S8), (L6)	

<NOTE1>
- Before attaching the Front panel assembly, ensure that the door opener ② is in the lower position.

<NOTE2>
- When inserting the flat wire into the connector, be careful not to make a mistake in the positioning of its electrodes.

<NOTE3>
- When it is required to remove the screws (S5) retaining the Mechanism assembly, please refer to the "Procedures for Lowering the Cassette holder assembly" (See on pages 1-3).
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- When attaching the Mechanism assembly, be careful not to damage the sensors on the Main board assembly. (D3001: LED, Q3002: Start sensor, Q3003: End sensor).

<NOTE4>
- The REC safety board assembly is attached to the Switch/Display board assembly. It is therefore necessary to remove the REC safety board assembly before removing the Switch/Display board assembly.

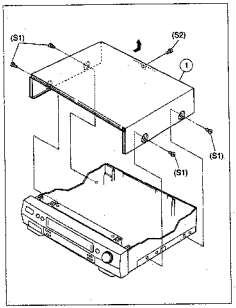


Fig. D1

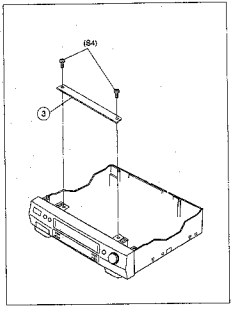


Fig. D3

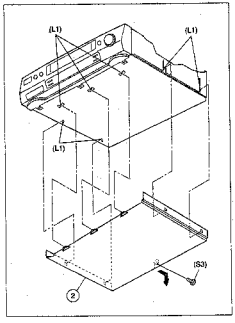


Fig. D2

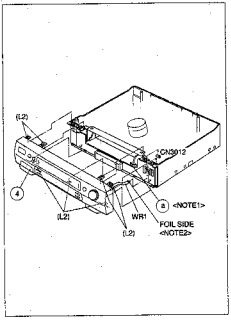


Fig. D4

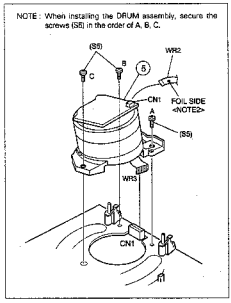


Fig. D5

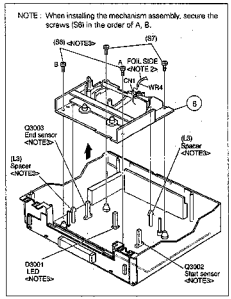


Fig. D6

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

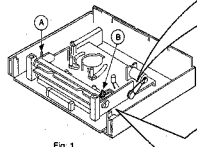


Fig. 1

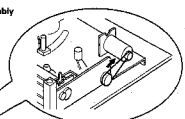


Fig. 2

Turn the loading motor pulley in the direction as indicated by Fig.2. As both Ⓐ and Ⓑ levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of Ⓐ, Ⓑ, Ⓑ, Ⓐ. When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

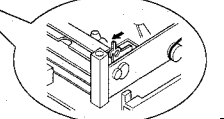


Fig. 3

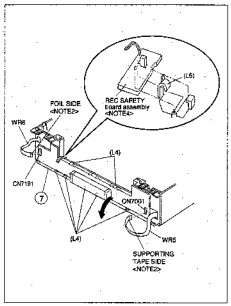


Fig. D7

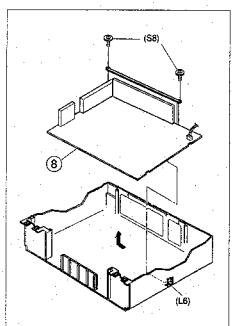


Fig. D8

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Mechanism assembly, this unit is constructed so as to allow the Mechanism and Main board assemblies to be removed together from the Chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

(1) Remove the Top cover, Bracket, Front panel assembly. (Refer to page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Mechanism assembly. (Refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(3) Take out 2 screws Ⓐ and 2 screws Ⓑ as shown in Fig. 1-4-1.

(4) Remove the flat wires from CN3011 and CN7504 on the Main board assembly.

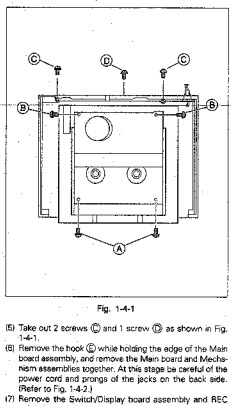


Fig. 1-4-1

(5) Take out 2 screws Ⓒ and 1 screw Ⓓ as shown in Fig. 1-4-1.

(6) Remove the hook Ⓔ while holding the edge of the Main board assembly, and remove the Main board and Mechanism assemblies together. At this stage be careful of the power cord and prongs of the jacks on the back side. (Refer to Fig. 1-4-2.)

(7) Remove the Switch/Display board assembly and REC safety board assembly. (Refer to page 1-4 of 1.3 DISASSEMBLY/ASSEMBLY METHOD. Take care not to pull the flat wires (Fig. D7) from CN7001 and CN7191.)

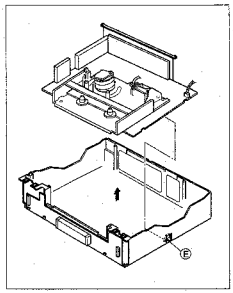


Fig. 1-4-2

(8) Place the Switch/Display board assembly and REC safety board assembly on the front side of the Mechanism and Main board assemblies which was removed at the step (6), then connect the flat wires into CN3011 and CN7504 of the Main board assembly. (Refer to Fig. 1-4-3.)

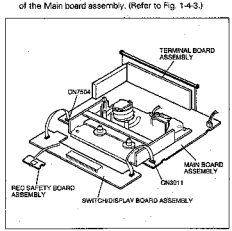


Fig. 1-4-3

(9) Connect the power cord to the wall socket, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)

Note: *When carrying out diagnosis and repair of the Main board assembly in the service position, be sure to ground both the Main board and the Mechanism assemblies.*

If they are improperly grounded, there may be noise on the playback picture or the FDP counter display may move even when the mechanism is kept in an inoperative status.

1.4.2 Precautions for cassette loading in the "SERVICE POSITION"

The REC safety board assembly detects cassette loading as well as cassette tabs. Therefore, after the assembly has been removed in the "SERVICE POSITION", it is required to set the switch manually on the REC safety board assembly when a cassette is loaded.

1.4.3 Cassette loading and ejection methods in the "SERVICE POSITION" (See Fig. 1-4-3).

(1) Insert a cassette halfway in the Cassette holder assembly.

(2) Set the switch on the REC safety board assembly to ON (by pressing the switch).

(3) As soon as the cassette starts to be loaded, set the switch on the REC safety board assembly to OFF (by releasing the switch).

(4) Now the desired operation (recording, playback, fast forward, rewind, etc.) is possible in this status (the status shown in Fig.1-4-3).

NOTES: • *When performing diagnostics of the tape playback or the recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode when performing diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position (the status shown in Fig.1-4-3).*

• *In the "SERVICE POSITION", the cassette tabs cannot be detected and recording becomes possible even with a cassette with broken tabs such as the alignment tape. Be very careful not to erase important tapes.*

(5) The switch on the REC safety board assembly does not have to be operated when ejecting a tape. But be sure to turn the set to the normal position before ejecting the tape.

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Connect TPGND and TP7001 (TEST) on the Switch/Display board assembly with a jump wire.
(3) Connect VCR to AC.
(4) Press the POWER button.
(5) With lock levers Ⓐ Ⓑ on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers Ⓐ Ⓑ, refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

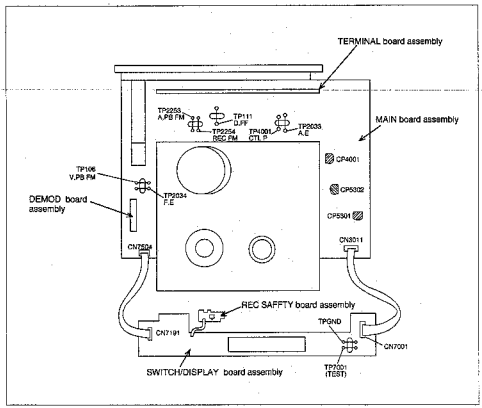


Fig. 1-5-1

1.6 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.6.1 How to display record of an emergency faults

Note: *Put the unit into A mode by using the VCR remote controller. (When it is in B mode, the preset remote control codes are not accepted.)*

(1) Press the "N" button of the presetting unit and the two previous emergency faults are shown in the FDP.
(2) Press the "N" button of the presetting unit again to return to the normal mode.

[Example] E : 01 : 03
- Emergency fault before last
- Emergency fault of the last time

[Example] E : — — : — — ← No record of emergency

1.6.2 Detail of emergency faults

EMG DATA	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 04	DRUM FF input is absent. (for more than 3 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 06	CAPSTAN FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF
E : 08	Initialized action of DD (Dynamic Drum) is not complete for less than 4 seconds.	Connect VCR to AC	STOP
E : 09	DD drive motor is not rotate for more than 2.5 seconds.	on TIME SCAN	STOP

Table 1-6-1 EMERGENCY FAULTS

1.6.3 How to clear emergency record

Press the COUNTER RESET button on the remote controller in the emergency record display mode, and the record of the emergency fault(s) is cleared.

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001) 1/2

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+) SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-) SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	IN	CTL PULSE FEEDBACK
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	NORM/MESECIS	IN	NORMAL MODE:L/MESECAM MODE:M/SVHS MODE:H
12	SECAM DETAILLER OUT	-	NC
13	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
14	START SENSOR	IN	START SENSOR
15	END SENSOR	IN	END SENSOR
16	IND(L)	IN	AUDIO INPUT (L,CH) FOR THE FDP AUDIO INDICATOR
17	LND ABS	IN	DYNAMIC DRUM POSITION DETECT
18	SCR ID	IN	SCRAMBLE CONTROL INPUT (SCRAMBLE:H)
19	IND(R)	IN	AUDIO INPUT (RCH) FOR THE FDP AUDIO INDICATOR
20	BS ANT/AFC	IN	NC/TUNING CLOCK
21	LED/RF AGC	IN	NC(CHANGES IN ATS+IC OUTPUT AS CAUSED BY CHANGES IN RECEIVER SENSITIVITY WHEN THE SAME CHANNEL IS RECEIVED MORE THAN ONCE ARE INPUT.
22	A.ENV/IND(L)	IN	AUDIO PB FM ENV.INPUT/NON HIFI MODE:L
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	LSA	IN	MECHANISM MODE DETECT(A)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	CAP REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	R.PAUSE/COMPU.IN	IN	REMOTE PAUSE CONTROL /NC
31	P50 IN	IN	CONTROL SIGNAL FOR TV LINK
32	LMC3	OUT	LOADING MOTOR DRIVE(3)
33	P50 OUT/COMPU OUT	OUT	CONTROL SIGNAL FOR TV LINK
34	RAE	OUT	RAE TERMINAL FOR PAUSE OUT
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	P CTL(H)	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
38	S8 G(PWM)	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
39	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
40	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
41	REC SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
42	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
43	VSS	-	GND
44	TRICK(H)	OUT	SPECIAL PLAYBACK:H
45	VCC	-	SYSTEM POWER
46	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC:H)
47	SUB DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR SUB CPU
48	SUB CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR SUB CPU
49	I2C DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR THE ON-SCREEN IC
50	I2C CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR THE ON-SCREEN IC
51	S.DATA TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
52	S.DATA FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
56	LOCK(L)	IN	TUNING PLL LOCK DETECT: L

Table 1-7-1 SYSCON CPU pin function(1/2)

1.7.2 Syscon CPU pin function (IC3001) 2/2

PIN NO.	LABEL	IN/OUT	FUNCTION
57	TU CE	OUT	CHIP ENABLE OF THE TUNER UNIT
58	JUST CLK/CCIR(H)	OUT	NC/EXCEPT FOR NTSC:L
59	DDFG	IN	DYNAMIC DRUM FG INPUT
60	TU CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU DATA	OUT	TUNING DATA
62	FWF	-	NC
63	NM/EL(V)OPERATE SW	-	NC
64	X2	-	TIMER CLOCK (32.768KHz)
65	X1	-	TIMER CLOCK (32.768KHz)
66	RES(L)	-	RESET TERMINAL (RESET ON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK(10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK(10MHz)
70	VCC	-	SYSTEM POWER
71	MODE	-	NC
72	TU A.MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU V.MUTE(H)	OUT	TUNER VIDEO CONTROL (MUTE:H)
74	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
75	I2C CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	DDCFWD	OUT	DYNAMIC DRUM CONTROL(FORWARD)
78	DDCREV	OUT	DYNAMIC DRUM CONTROL(REVERSE)
79	DDSPDCTL	OUT	DYNAMIC DRUM SPEED CONTROL
80	V.P.CTL	OUT	V.PULSE CONTROL V COMPENSATION DURING SPECIAL PLAYBACK
81	PAL EP CTL/R-Y REV	OUT	D.FF TIMING CONTROL SIGNAL FOR SPECIAL PLAYBACK
82	VCC	-	SYSTEM POWER
83	SLOW P	OUT	MEMORY TIMING CONTROL IN THE SLOW MODE
84	VSS	-	GND
85	SP SHORT(H)	OUT	MODE SELECT
86	LP SHORT(H)	OUT	MODE SELECT
87	FLY ON(H)	-	NC
88	A.REC STOP	OUT	HIFI AUDIO SOUND RECORDING START
89	SECAM(H)	-	NC
90	HEAD SEL	OUT	HEAD SELECT(LP HEAD:H, SP HEAD:L)
91	OSD CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
92	SYNC DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
93	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE:L)
94	JSB/STLB	IN	INPUT FOR THE JOG SHUTTLE
95	SHTL(L)/JOGA	IN	INPUT FOR THE JOG SHUTTLE
96	JOGB	IN	INPUT FOR THE JOG SHUTTLE
97	JSA/STLA	IN	INPUT FOR THE JOG SHUTTLE
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	SUB RESET/V.UP(H)	OUT	SUB CPU RESET/RESET:L/NC
104	S.CASS(H)	-	NC
105	PERI 1S	-	NC
106	LOCK(L)/P.SAVE(L)	OUT	NC/POWER SAVE:L
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTAGE

Table 1-7-2 SYSCON CPU pin function(2/2)

SECTION 2
MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

(1) Unplug the power cable of the main unit before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When installing the front panel assembly, be sure to hook the lug on the back side of the cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE.)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Unload the cassette by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-1.)
(3) Bring the pole base assembly (supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
(4) Move the top guide toward the drum while holding down the lug Ⓐ of the bracket retaining the top guide. Likewise hold part Ⓑ down and remove the top guide. Section Ⓒ of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-2.)
(5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

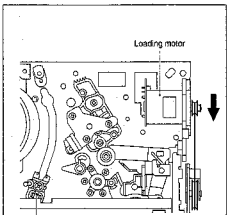


Fig. 2-1-1

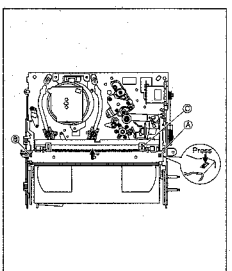


Fig. 2-1-2

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3.)
(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-4.)
(4) In the same way as in the electrical failure instructions in 2.1.3 (4), remove the top guide.
(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.
(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

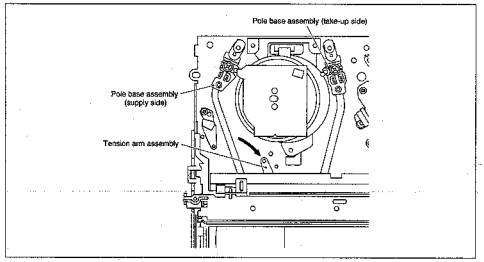


Fig. 2-1-3

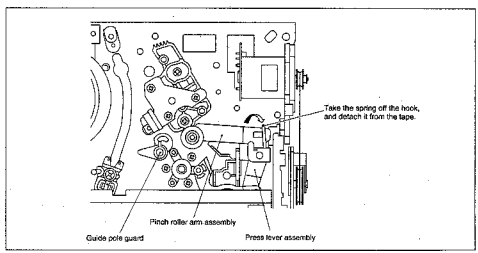


Fig. 2-1-4

2.1.4 Jigs and Tools Required for Adjustment

Alignment tape (SP) MHPE	Alignment tape (LP) MHPE-L	Back tension cassette gauge PUJ48078-2	A/C head position bit PTUB94010
Roller driver PTUB94002	**Presetting unit PTUB94006**	**Torque gauge PUJ48075-2**	

Table 2-1-1 Jigs and tools required for adjustment

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

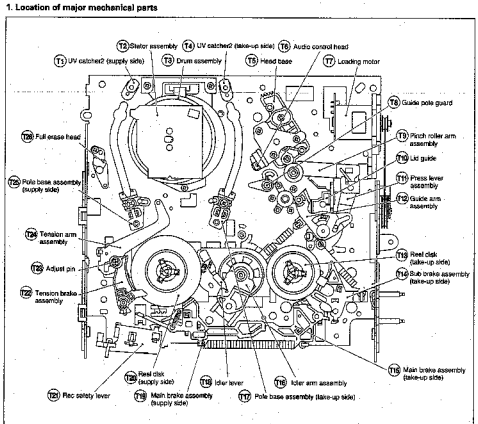

T2 Stator assembly
T4 UV catcher2 (take-up side)
T6 Audio control head
T1 UV catcher2 (supply side)
T3 Drum assembly
T5 Head base
T7 Loading motor
T8 Guide pole guard
T26 Full erase head
T9 Pinch roller arm assembly
T10 Lid guide
T25 Pole base assembly (supply side)
T11 Press lever assembly
T12 Guide arm assembly
T24 Tension arm assembly
T23 Adjust pin
T13 Reel disk (take-up side)
T14 Sub brake assembly (take-up side)
T22 Tension brake assembly
T15 Main brake assembly (take-up side)
T21 Reel disk (supply side)
T20 Idler lever
T18 Idler arm assembly
T27 Rec safety lever
T19 Main brake assembly (supply side)
T17 Pole base assembly (take-up side)

Fig. 2-1-5 Mechanism assembly top side

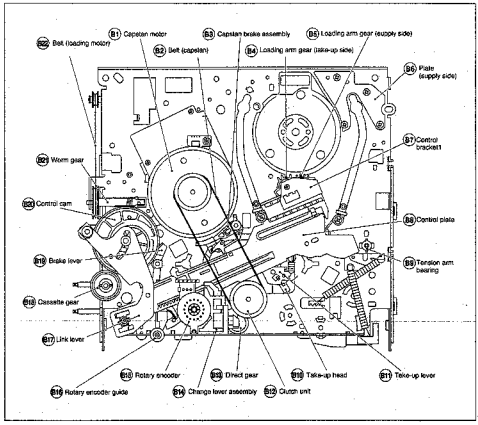


Fig. 2-1-6 Mechanism assembly bottom side

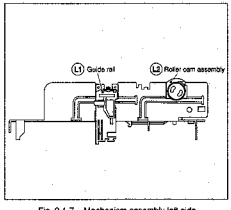


Fig. 2-1-7 Mechanism assembly left side

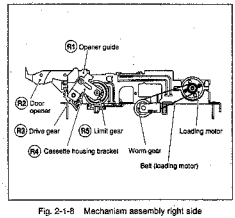


Fig. 2-1-8 Mechanism assembly right side

Note: *This table shows the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.*
The circled numbers (symbols and numbers) preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "(B)" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

Symbols and numbers / Removal parts / (Reference items) Replacement parts	Front (O)/Back (B) of mechanism	Number of removal steps	① Guide rail	② Guide rail assembly	③ Cassette holding bracket	④ Opener guide	⑤ Relay gear	⑥ Cassette holder assembly	⑦ Door opener	⑧ Door gear	⑨ Pinch roller arm assembly	⑩ Guide arm assembly	⑪ Pinch roller arm assembly	⑫ Guide arm assembly	⑬ Press brake assembly	⑭ UV catcher	⑮ Control arm assembly	⑯ Clutch unit	⑰ Change lever assembly	⑱ Direct gear	⑲ Link lever	⑳ Worm gear	㉑ Control plate	㉒ Loading arm gear (supply side)	㉓ Loading arm gear (take-up side)	㉔ Take-up lever	㉕ Sub brake assembly (take-up side)	㉖ Main brake assembly	㉗ Tension arm assembly	㉘ Idler lever	㉙ Brake lever
① 2.2.3 Guide rail	T	1																													
② 2.2.3 Roller cam assembly	T	1																													
③ 2.2.3 Cassette holding bracket	T	1																													
④ 2.2.3 Opener guide	T	2				1	2																								
⑤ 2.2.3 Door opener	T	3				1	2																								
– 2.2.3 Relay gear	T	3				1	2																								
⑥ 2.2.3 Limit gear	T	3				1	2																								
– 2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																								
⑦ 2.2.3 Door gear	T	4				1	2	3																							
– 2.2.3 Drive arm	T	5	1	2	3	4	5	6	7																						
⑧ 2.2.4 Pinch roller arm assembly	T	1																													
⑨ 2.2.5 Guide arm assembly	T	1																													
⑩ 2.2.5 Press lever assembly	T	3											1	2																	
⑪ 2.2.5 Audio control head	T	1																													
⑫ 2.2.7 Loading motor	T	1																													
⑬ 2.2.9 Capstan motor	T/B	1																													
⑭⑭ 2.2.9 UV catcher	T	1																													
⑮ 2.2.9 Pole base assembly (take-up side)	T/B	2																													
⑯ 2.2.9 Pole base assembly (supply side)	T/B	2													1																
⑰ 2.2.10 Rotary encoder	B	1																													
⑱ 2.2.11 Clutch unit	B	1																													
⑲ 2.2.12 Change lever assembly	B	3																	1	2											
⑳ 2.2.12 Direct gear	B	4																	1	2	3										
㉑ 2.2.12 Clutch gear	B	5																	1	2	3	4									
㉒ 2.2.13 Link lever	B	1																													
㉓ 2.2.14 Cassette gear	B	2																					1								
㉔ 2.2.14 Control cam	B	2																					1								
㉕ 2.2.14 Worm gear	B	1																													
㉖ – Lid guide	T/B	5													1	2	3					4									
㉗ 2.2.15 Control bracket	B	1																													
㉘ 2.2.15 Control plate	B	9																	1	2	3		4								
㉙ 2.2.16 Loading arm gear (supply side)	B	7																	1	2	3		4		5	6					
㉚ 2.2.16 Loading arm gear (take-up side)	B	8																	1	2	3		4		5	6	7				
– 2.2.16 Loading arm gear shaft	B	9																	1	2	3		4		5	6	7	8			
㉛ 2.2.17 Take-up lever	T/B	7																	1	2	3		4		5	6					
㉜ 2.2.17 Take-up head	T/B	8																	1	2	3		4		5	6		7			
– 2.2.17 Control pulley guide	T/B	8																	1	2	3		4		5	6		7			
㉝ 2.2.18 Capstan brake assembly	T/B	2																	1	2	3		4		5	6					
㉞ 2.2.19 Sub brake assembly (take-up side)	T/B	16	1	2	3	4	5	6	7	8									8	9	10		11		12		13	14			
㉟ 2.2.20 Main brake assembly (take-up side)	T/B	15	1	2	3	4	5	6	7	8									9	10	11		12		13	14			15		
㊱ 2.2.20 Main brake assembly (supply side)	T/B	9	1	2	3	4	5	6	7	8																					
㊲ 2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8									9	10	11		12		13	14			15		
㊳ 2.2.21 Tension brake assembly	T/B	8	1	2	3	4	5	6	7	8																					
㊴ 2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	9																				8	
㊵ 2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																				9	
㊶ 2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																				9	
㊷ 2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	9									9	10	11		12		13	14				15	16
㊸ 2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	9									9	10	11		12		13	14				15	16	17
㊹ – Brake lever	T/B	18	1	2	3	4	5	6	7	9									9	10	11		12		13	14			15	16	17	
㊺ – Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8									9	10	11		12		13	14			15	16	17	18

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.
When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note: ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.
(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

(1) See the mechanism assembly and disassembly diagrams (M4) for the lubricating or greasing spots. See Table 2-1-2 for the types of oil or grease to be used.

Type	Name	Serial No.	Symbols on the disassembly diagrams
Grease	Metemp SH-P	KYODO-SH-P	AA
Oil	Cosmohydro HV56	COSMO-HV56	BB

Table 2-1-2 Grease and oil used for the unit

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours ~1000H	Operation Hours ~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ Cleaning
○ Inspection or Replacement if necessary

Table 2-1-3

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another.
(For information on phase matching of the mechanism, see the instructions on how to install individual parts.)

This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-1.)

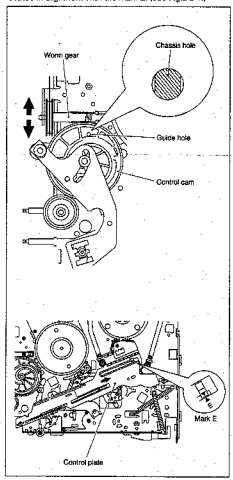


Fig. 2-2-1

2.2.3 Cassette Holder Assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-2.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

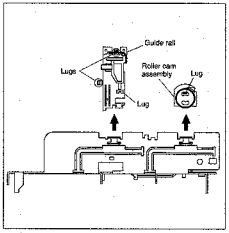


Fig. 2-2-2

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3.)

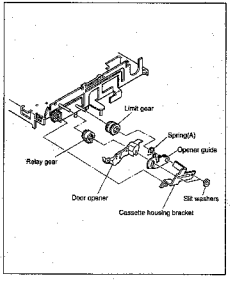


Fig. 2-2-3

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-4.)

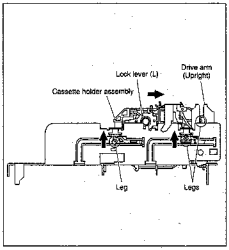


Fig. 2-2-4

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs Ⓐ and Ⓑ on the right side out of the rail and also pull up the leg Ⓒ. (See Fig.2-2-5 and Fig.2-2-6.)

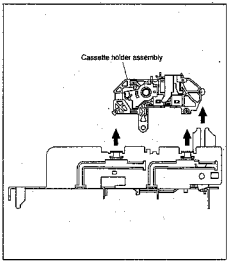


Fig. 2-2-5

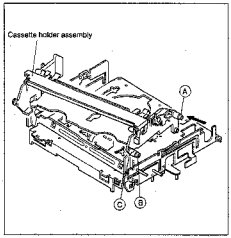


Fig. 2-2-6

(6) Draw out the drive gear, and remove the drive arm.

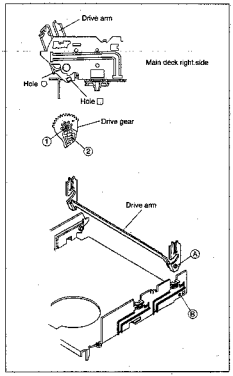


Fig. 2-2-7

2. How to install (Phase matching)

(1) Insert the section Ⓐ of the drive arm into the section Ⓑ of the main deck.

(2) Insert the section Ⓘ of the drive gear into the round hole, and the section Ⓙ into the square hole on the drive arm. (See Fig.2-2-7.)

(3) Hold the drive arm upright and fit the leg Ⓒ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-8.)

(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs Ⓐ and Ⓑ into the rail. (See Fig.2-2-8.)

(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-9.)

(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.

(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-10.)

(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-10.)

(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

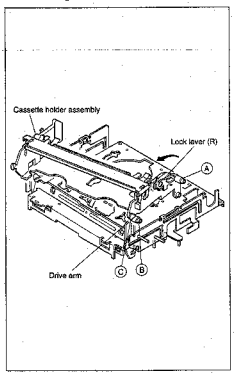


Fig. 2-2-8

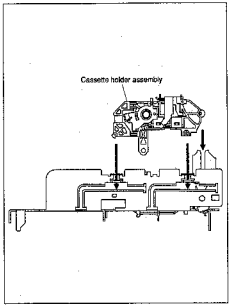


Fig. 2-2-9

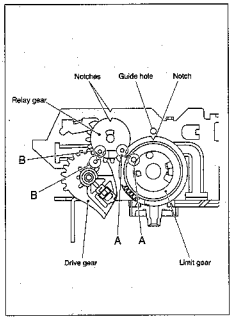


Fig. 2-2-10

2.2.4 Pinch Roller Arm Assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.

(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-11.)

(3) Remove the pinch roller arm assembly by pulling it up.

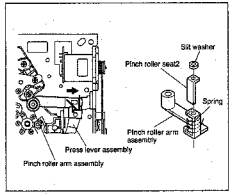


Fig. 2-2-11

2.2.5 Guide Arm Assembly and Press Lever Assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.

(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-12.)

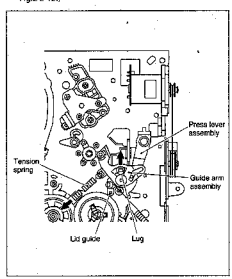


Fig. 2-2-12

2.2.6 Audio Control Head

1. How to remove

(1) Remove the two screws (A) and remove the audio control head together with the head base.

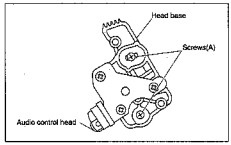


Fig. 2-2-13

(2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

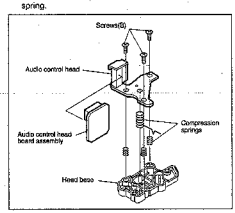


Fig. 2-2-14

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-15. Also make sure that the screw center is brought into alignment with the center position of the slot.

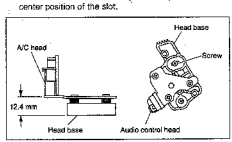


Fig. 2-2-15

2.2.7 Loading Motor

1. How to remove

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-16.

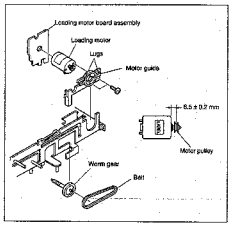


Fig. 2-2-16

2.2.8 Capstan Motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.
(2) Remove the three screws (A) and remove the capstan motor.

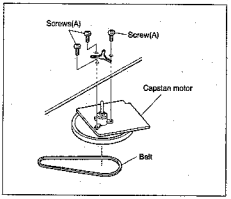


Fig. 2-2-17

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.
(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.) Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-18.

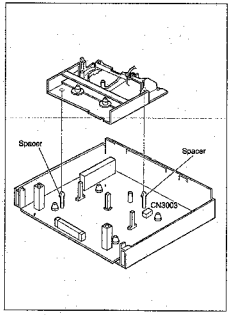


Fig. 2-2-18

(3) Making sure that the connector CN3003 of the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note: ***When the capstan motor has been replaced with a new one, perform recording in the LP mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole Base Assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the "Procedures for Lowering the Cassette holder assembly" of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

NOTE: ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

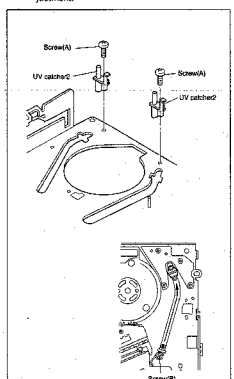


Fig. 2-2-19

2.2.10 Rotary Encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-20.)

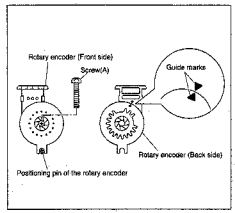


Fig. 2-2-20

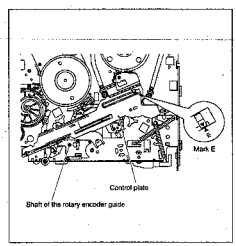


Fig. 2-2-21

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-20. (See Fig. 2-2-20 and Fig. 2-2-21.)
(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.
(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch Unit

(1) Remove the belt wound around the capstan motor and the clutch unit.
(2) Remove the slit washer and remove the clutch unit.

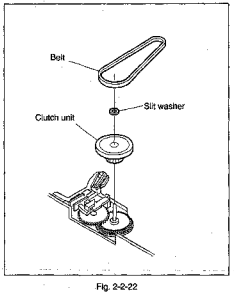


Fig. 2-2-22

2.2.12 Change Lever Assembly, Direct Gear and Clutch Gear1

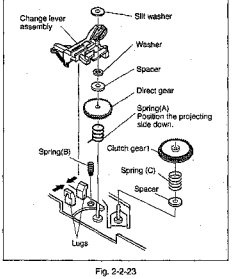


Fig. 2-2-23

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.
(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-23.)

2. How to install

(1) Install the clutch gear1, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-23.)
(2) Let the spring (B) droop into the rotary encoder guide hole and install the change lever assembly. (Take care not to mistake a direction of the spring.) The point is to slightly lift the clutch gear1 and catch it from the both sides with the assembly. (See Fig.2-2-24.)

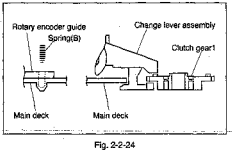


Fig. 2-2-24

2.2.13 Link Lever

1. How to remove

(1) Remove the two slit washers.
(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

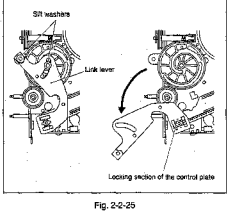


Fig. 2-2-25

2. How to install (Phase matching)

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-26.)
(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-27.)
(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-25.)
(4) Rotate the link lever clockwise so that it is installed on the shafts in the center and on the left of the control cam.
(5) Fasten the slit washers at these two points.

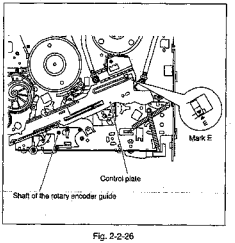


Fig. 2-2-26

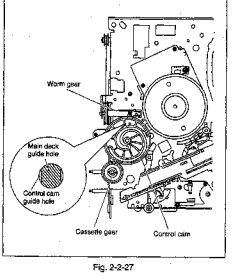


Fig. 2-2-27

2.2.14 Cassette Gear, Control Cam and Worm Gear

1. How to remove

(1) Remove the control cam by lifting it.
(2) Open the two lugs of the cassette gear outward and pull the latter off.
(3) Remove the belt wound around the worm gear and the loading motor.
(4) Open the lug of the lid guide outward and remove the worm gear.

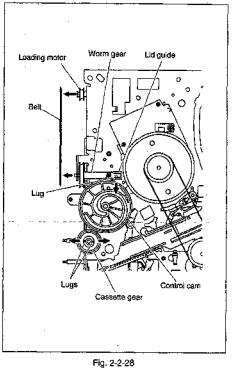


Fig. 2-2-28

2.2.15 Control Plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-29.)

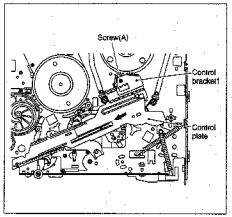


Fig. 2-2-29

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-30 (to the left of centre of the R section).
(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.
(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-31.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-31.)
(5) Pull off the hexagonal wrench for positioning.

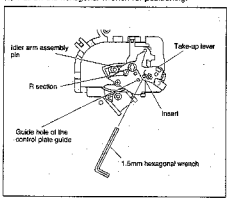


Fig. 2-2-30

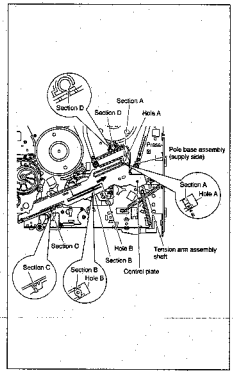


Fig. 2-2-31

2.2.16 Loading Arm Gear (supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-32.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-32.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-32 and Fig. 2-2-33.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

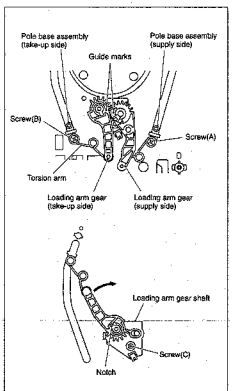


Fig. 2-2-32

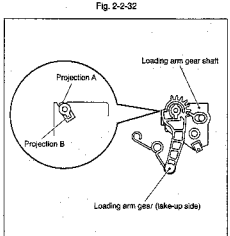


Fig. 2-2-33

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-33.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-32.)

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

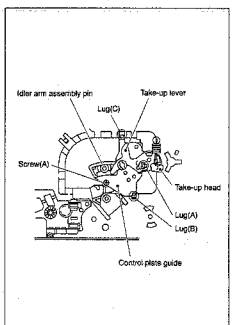


Fig. 2-2-34

2.2.18 Capstan Brake Assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-35.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

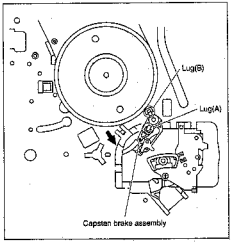


Fig. 2-2-35

2.2.19 Sub Brake Assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

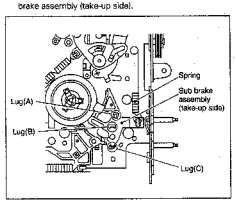


Fig. 2-2-36

2.2.20 Main Brake Assembly (take-up side), Reel Disk (take-up side) and Main Brake Assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-37.)

Note: *If the main brake assembly is difficult to remove, press it and hold the adjustment pin from the back side of the main deck when attempting to remove it.*
After the adjustment pin has been removed or the main brake assembly or the reel disk on the supply or take-up side have been replaced, it is required to adjust the main brake assembly torque. See page 2-23 for the detailed adjustment procedures.

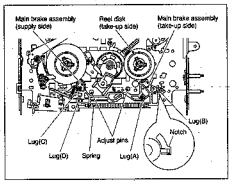


Fig. 2-2-37

(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-38.)

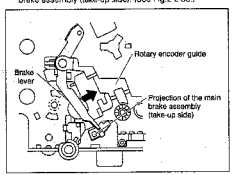


Fig. 2-2-38

2.2.21 Tension Brake Assembly, Reel Disk (supply side) and Tension Arm Assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-39.)

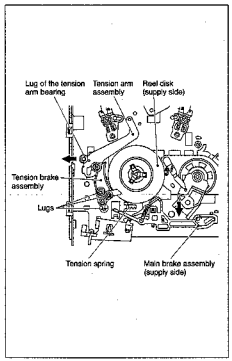


Fig. 2-2-39

2.2.22 Idler Lever, Idler Arm Assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
(2) Remove the slit washer and pull out the idler arm assembly.

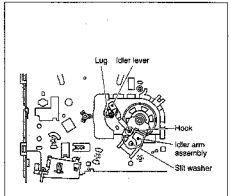


Fig. 2-2-40

2.2.23 Stator Assembly

(1) Remove the flat cable.
(2) Remove the two screws (A).
(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)
(4) After installation, be sure to perform the PB switching point adjustment according to the electrical adjustment procedure.

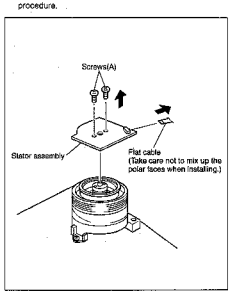


Fig. 2-2-41

2.2.24 Rotor Assembly

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

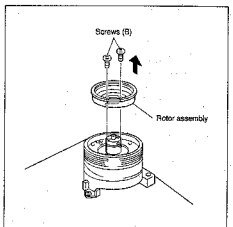


Fig. 2-2-42

Note: *When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.*

(3) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-43.
(4) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-43.)

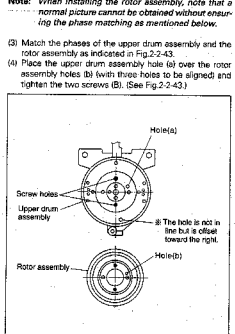


Fig. 2-2-43

2.2.25 Upper Drum Assembly

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

Note: *When replacement is required, control the up-down movement of the brush. Never apply grease.*

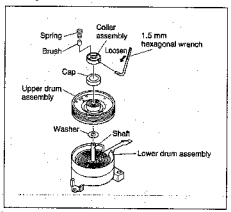


Fig. 2-2-44

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-45.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-44.)

Note: *When replacing the upper drum assembly, replace it the together with the washer.*

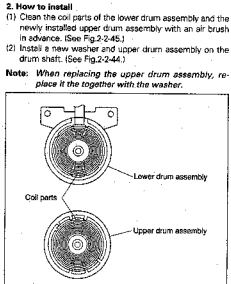


Fig. 2-2-45

(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-46 while controlling its up- down movement.

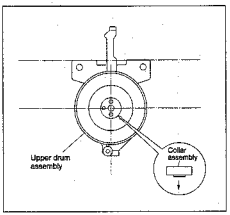


Fig. 2-2-46

(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.

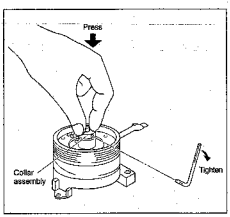


Fig. 2-2-47

(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig.2-2-41 and 2-2-42.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
- PB switching point adjustment
- Slow tracking adjustment
- Compatibility adjustment (Be sure to check for compatibility for the LP mode.)

2.3 COMPATIBILITY ADJUSTMENT

Notes:
- *Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.*
- *To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.*

2.3.1 Checking/Adjustment of FM Waveform Linearity

(1) Connect the oscilloscope to TP106IV. PB FMI of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
(2) Playing the alignment tape MHPE, observe the FM waveform.
(3) Press the channel buttons (▲, ▼) simultaneously during playback to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Make sure that there is no significant level drop of the FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig.2-3-1.)
(5) Reduce the FM waveform while pressing the channel buttons (▲, ▼) during playback. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver (PTU94002) to make the FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the guide roller to make it linear. (See Fig.2-3-3.)
(6) Then play MHPE-L and make sure that the FM waveform varies in parallel and linearly with the tracking operation. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play the alignment tape MHPE-L again and confirm the FM waveform.

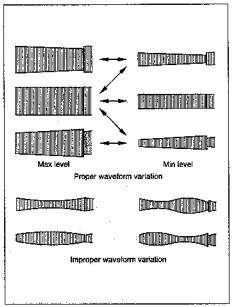


Fig. 2-3-1

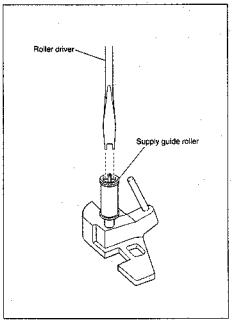


Fig. 2-3-2

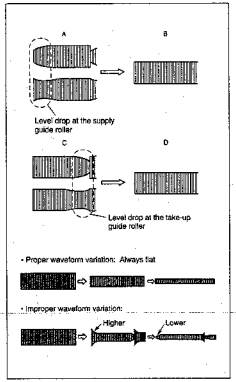


Fig. 2-3-3

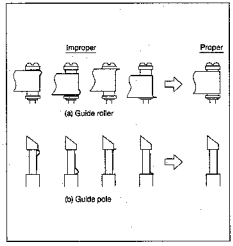


Fig. 2-3-4

2.3.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note: ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-15.)***

(1) Connect CH-1 of the oscilloscope to AUDIO OUT and CH-2 to TP4001 (CTL.P) of the main board assembly and observe the waveforms on both channels in the ALT mode.
(2) Play the alignment tape MHPE and adjust it by turning the screws (1), (2) and (3) little by little until the waveform of both the audio output signal and the control pulse reach maximum. The screw (1) and screw (3) are for adjustment of tilt and screw (2) for azimuth.

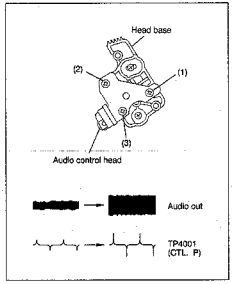


Fig. 2-3-5

2.3.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

(1) Connect the oscilloscope to TP108(V. P8 FM) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
(2) Play the alignment tape MHPE and observe the FM waveforms.
(3) Press the channel buttons (▲, ▼) simultaneously during playback to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Loosen screws (4) and (5) so that the A/C head position bit (PTU94010) is set as indicated in Fig.2-3-6.
(5) Turn the A/C head position bit fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the FM waveform output level. Then tighten the screw (4) temporarily.
(6) Then play the alignment tape MHPE-L.
(7) Press the channel buttons (▲, ▼) simultaneously during playback to enter the manual tracking mode. (This also brings the tracking to the centre.)
(8) Perform the tracking operation and make sure that the FM waveform is at its maximum.
(9) If it is not at maximum, loosen the temporarily tightened the screw (4) and turn the A/C head position bit to bring the audio control head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

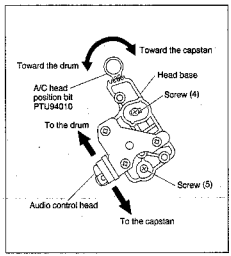


Fig. 2-3-6

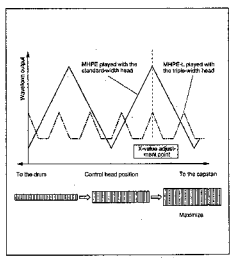


Fig. 2-3-7

2.3.4 Checking/Adjustment of the Standard Tracking Preset

Note: *Set the remote control code of the video recorder to A mode.*
(The unit set in B mode does not accept the remote control code of the presetting unit.)

(1) Connect the oscilloscope to TP108(V. PB FM) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
(2) Playing the alignment tape (MHPE-L and observing the FM waveform, make sure that the auto tracking operation is complete.
(3) Press the "D" button of the presetting unit twice.
(4) Make sure that the MHPE-L is not ejected.
(5) If ejected, again perform the phase (X-value) adjustment of the audio control head.

2.3.5 Checking/Adjustment of the Tension Pole

(1) Check the back tension cassette gauge (PUJ4B075-2) to make sure that the indicator points to 25 - 51 gf•cm.
(2) If the indicated value is outside this range, carry out the following adjustment steps.
  1) Select the mechanism servicing mode. (See 1.5 MECHANISM SERVICE MODE.)
  2) While in the Play mode, turn the adjustment pin with a straight-slot screwdriver while taking care not to touch the 2.5 mm dia. pole. (See Fig.2-3-8.)

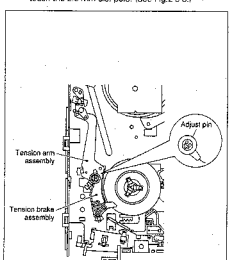


Fig. 2-3-8

2.3.6 Adjustment of the Tension Stud

(1) Adjust so that the left side of the tension stud is on the extension of the notch line of the main deck. (See Fig. 2-3-9.)

Note: *Adjustment is not usually necessary for the tension stud. Perform this adjustment only when it is out of position.*

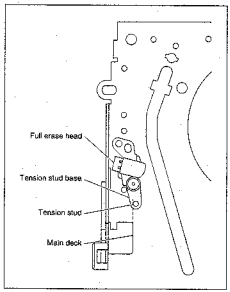


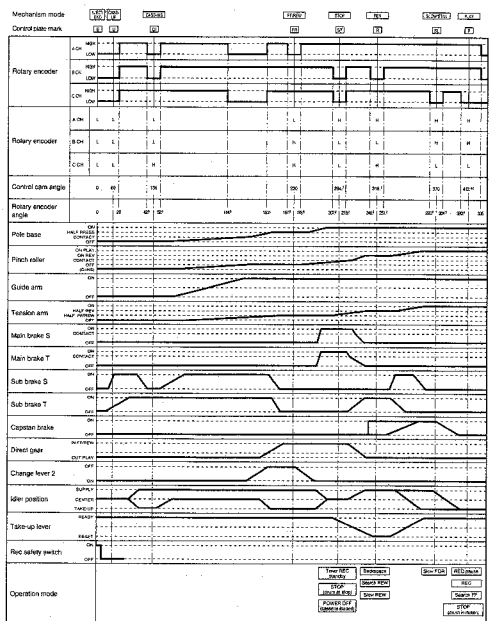
Fig. 2-3-9

2.3.7 Main Brake Torque Adjustment

Note: Adjustment of the main brake torque is required after the adjustment pin has been removed or the main brake assembly or the reel disk on the supply or take-up side have been replaced, removed or attached.

(1) Rotate the pulley of the loading motor by hand to align the mark ▼ on the loading arm gear shaft with the ST marking on the control plate (i.e. set to the STOP mode position).
(2) Insert a torque gauge (PUJ4B075-2) into the reel disk on the side to be played, hold the torque gauge lightly, rotate it clockwise when measuring the supply side torque or counterclockwise when measuring the take-up side torque, and read the value indicated at the moment the reel disk starts to slip.
(3) Make sure that the main brake torque values on the supply and take-up sides are both between 23.5×10^{-3} — 78.4×10^{-3} N•m (240 — 800 gf•cm). If the value is outside the specified range, adjust to the specified value by rotating the adjustment pin.
If an adjustment by using the adjustment pin is not possible, replace the main brake assembly.

Mechanism Timing Chart



SECTION 3
ELECTRICAL ADJUSTMENT

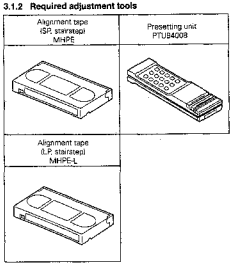
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is availble.

3.1.1 Required test equipment

① Colour television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Signal generator: RF/IF sweep/marker
⑤ Signal generator: PAL colour bar, stairstep
⑥ Recording tape (VHS tape)
⑦ Digit-key remote controller(provided)

3.1.2 Required adjustment tools



3.1.3 Colour bar signal,colour bar pattern

● PAL colour bar signal

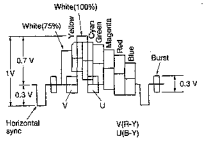


Fig.3-1-1 PAL colour bar signal waveform

● PAL colour bar pattern

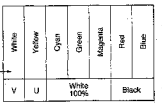


Fig.3-1-2 PAL colour bar pattern

Note:
The system control circuit of this model has an automatic recognition about the ON-OFF control of the ***DOCTOR SYSTEM.***

3.2 SERVO CIRCUIT

Notes: • *Unless otherwise specified,all measurement points and adjustment parts are located on the MAIN BOARD.*
• *Set the VCR to the mode A by the remote controller.*

3.2.1 PB switching point

Signal	• Alignment tape (MHPE), Stairstep
Mode	• PB
Equipment	• Oscilloscope
Measurement point	• VIDEO OUT TERMINAL
Trigger slope (+)	• TP111(D.FF)
Adjustment tool	• Presetting unit (PTU94008)
Specification	• 6.5 ± 0.5H

Note: • *Use only the "O" button, depressing other buttons during adjustment may cause adjustment errors.*

(1) Playback the stairstep signal of the alignment tape.
(2) Connect an oscilloscope to VIDEO OUT TERMINAL and TP111 (negative slope), and then observe VIDEO OUT TERMINAL.
(3) Press the "O" button of the presetting unit.
(4) The adjustment is performed automatically.
Once the adjustment is performed, the VCR will go into the STOP mode.
(5) Playback the alignment tape again, confirm the switching point (See Fig. 3-2-2).

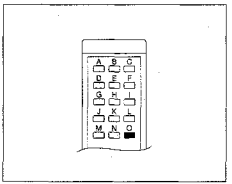


Fig. 3-2-1 Presetting unit

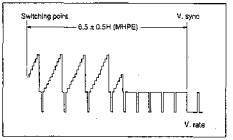


Fig. 3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Tuner or colour bar
Mode	• SP/LP : REC → PB(SLOW) • Automatic tracking OFF
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit (PTU94008)
Specification	• Minimum noise

Note: • *Use only the "B" and "C" buttons, depressing other buttons during adjustment may cause adjustment errors.*

(1) Record a colour bar signal in the SP mode.
(2) Playback the recorded signal on the FWD slow mode.
(3) Set the tracking control to the centre position by simultaneously pressing the CH "+" and "−" buttons.
(4) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing the "B " or "C " buttons of the presetting unit.
(5) Depress the STOP button.
(6) Confirm that the bar noise is not visible on the TV monitor in the slow mode.
(7) Repeat steps (2) to (6) in the REV slow mode.
(8) Repeat steps (1) to (7) in the LP mode.

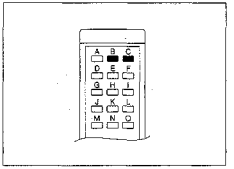


Fig. 3-2-3 Presetting unit

3.2.3 Dynamic drum preset

Signal	• Alignment tape (MHPE-L), Stairstep
Mode	• Automatic tracking OFF
Equipment	• Oscilloscope
Measurement point	• TP106 (V./PB FM)
Trigger slope (+)	• TP111 (D.FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• FM waveform flat

Note: • *Use only the "D", "E" and "M" buttons, depressing other buttons during adjustment may cause adjustment errors.*

(1) Connect an oscilloscope to TP106 and external trigger from TP111 (positive slope).
(2) Playback the LP stairstep portion of the alignment tape.
(3) Set the automatic tracking control to the OFF by simultaneously pressing the CH "+" and "–" buttons.
(4) Adjust for maximum level of playback FM waveform by depressing the CH "+" or "–" buttons.
(5) Set the VCR to the LP 2x mode.
(6) Adjust for half level of playback FM waveform from maximum level by depressing the CH "+" or "–" buttons.
(7) Adjust by pressing the "M+D" or "M+E" buttons of the presetting unit for FM waveform is flat as shown in Fig. 3-2-5.
(8) Record the stairstep signal by the LP mode and play it back.
(9) Repeat steps (3) and (7) in the LP 1/6 FWD slow mode.

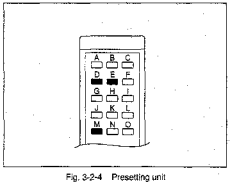


Fig. 3-2-4 Presetting unit

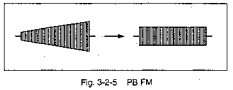


Fig. 3-2-5 PB FM

3.3 VIDEO CIRCUIT

Note: • *Set the VCR to the mode A by the remote controller.*

3.3.1 Auto picture

Signal	• Monoscope
Mode	• B.E.S.T. : OFF • REC then PB • SP/LP
Adjustment tool	• Presetting unit[PTU94008]
Specification	• STOP mode

Note: • *Use only the "L" button, depressing other buttons during adjustment may cause adjustment errors.*

(1) Record a monoscope signal in the SP mode.
(2) Playback the recorded signal.
(3) Press the "L" button of the presetting unit during playback.
(4) Confirm that the VCR will go into the STOP mode.
(5) Repeat steps (2) to (4) in the LP mode.

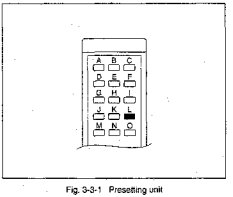


Fig. 3-3-1 Presetting unit

3.4 SYSCON CIRCUIT [HR-DD868EU]

Notes: • *Unless otherwise specified,all measurement points and adjustment parts are located on the MAIN BOARD.*
• *When perform this adjustment,remove the MECHANISM assembly.*

3.4.1 Timer clock

Signal	• No signal
Mode	• EE
Equipment	• Frequency counter
Measurement point	• IC3001-PIN61
Adjustment part	• C3025 (TIMER CLOCK)
Specification	• 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 µsec.)

(1) Connect the frequency counter to IC3001-PIN61.
(2) Connect the short wire between IC3001-PIN24 and Vcc(5V).
(3) Short the leads of capacitor C3026 once in order to reset IC3001.
(4) Disconnect the short wire between IC3001-PIN24 and Vcc then connect it again.
(5) Adjust C3025 trimmer capacitor so that the output from IC3001-PIN61 falls within 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 µsec.) range.

3.5 ON SCREEN CIRCUIT

Note: • *Set the VCR to the mode A by the remote controller.*

3.5.1 Character position

Signal	• No signal
Mode	• EE
Equipment	• TV-monitor
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
Specification	• Character centre

Note: • *Use only the "H" button, depressing other buttons during adjustment may cause adjustment errors.*

(1) Press the MENU button and display the on screen character.
(2) Observe the TV-monitor and centre position of character by pressing the "H" button of the presetting unit.

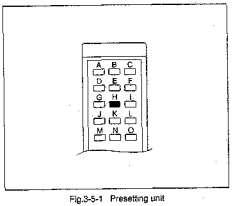


Fig.3-5-1 Presetting unit

CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

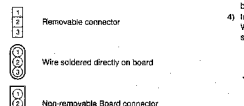
1. Units of components on the schematic diagram

Unless otherwise specified.
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
Chip resistors are 1/16 W.
K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

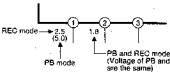
AUX : Active at high
$\overline{AUX}$ or AUX(L) : Active at low

3. Interpreting Connector indications



4. Voltage measurement

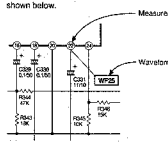
1) Video circuits
REC : Colour bar signal in SP mode, normal VHS mode
PB : Alignment tape, colour bar SP mode, normal VHS mode
— : Unmeasurable or unnecessary to measure
2) Audio circuits
REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
PB : REC then playback it
3) Movie Camera circuits
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



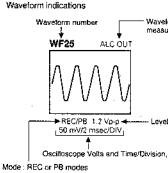
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
REC : Colour bar signal in SP mode, normal VHS mode
PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
PB : REC then playback it
3) Movie Camera circuits
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
Waveform indications on the schematic diagram are as shown below.

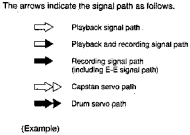


5) Waveform indications



8. Signal path Symbols

The arrows indicate the signal path as follows.



7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.

8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

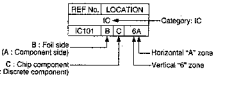
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

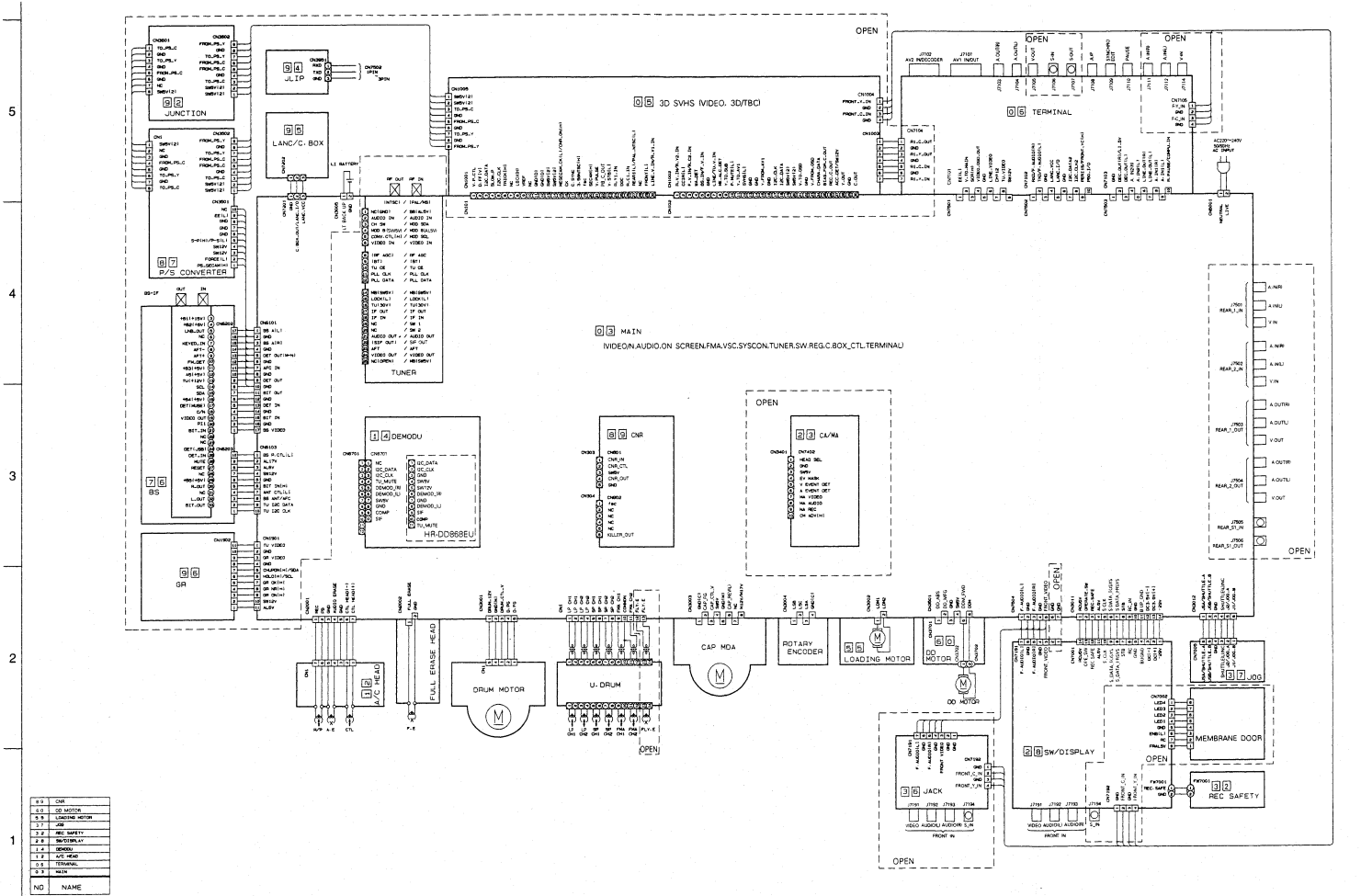
2. Parts location guides

Parts location are indicated by guide scale on the circuit board.

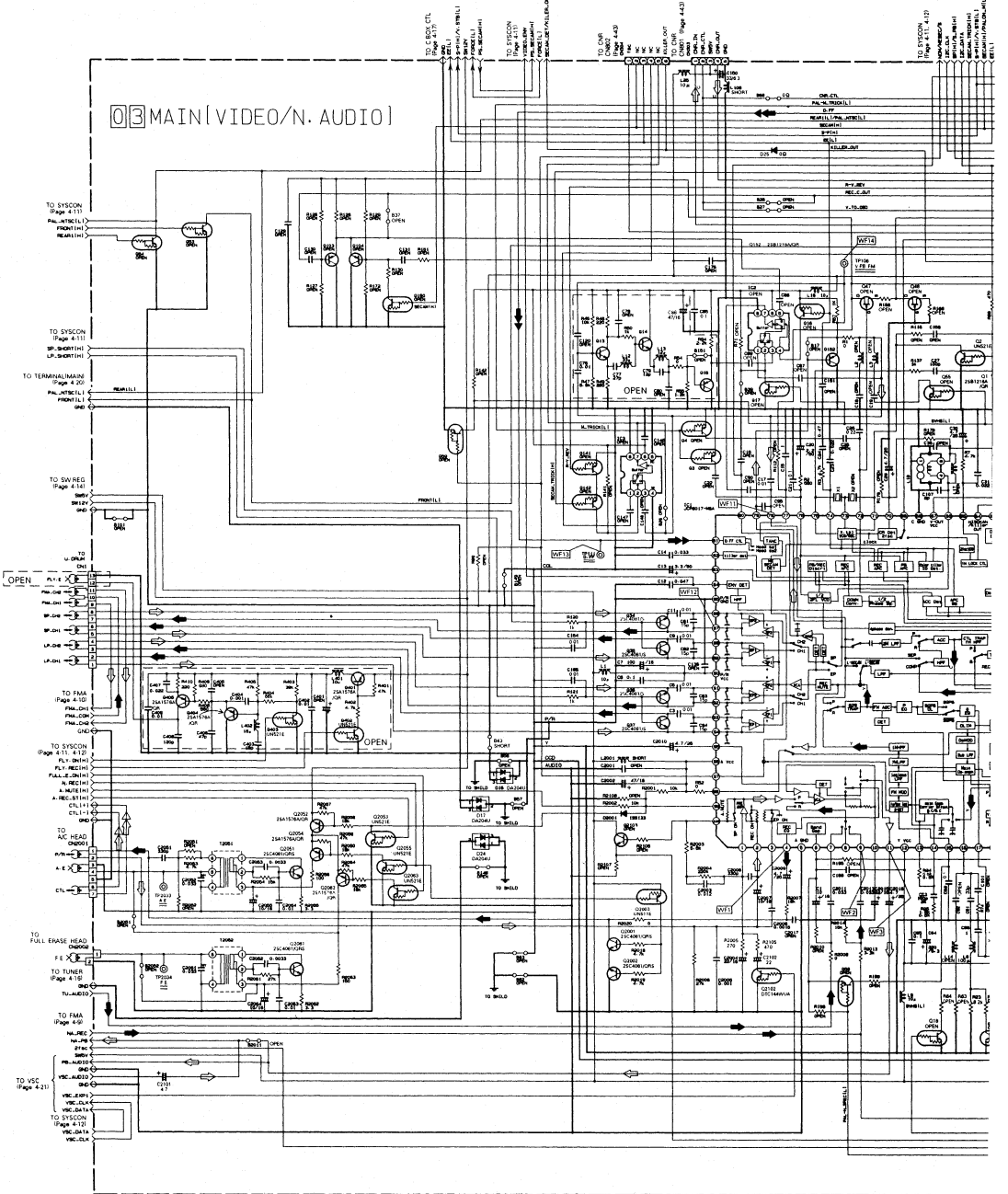


Note:
For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

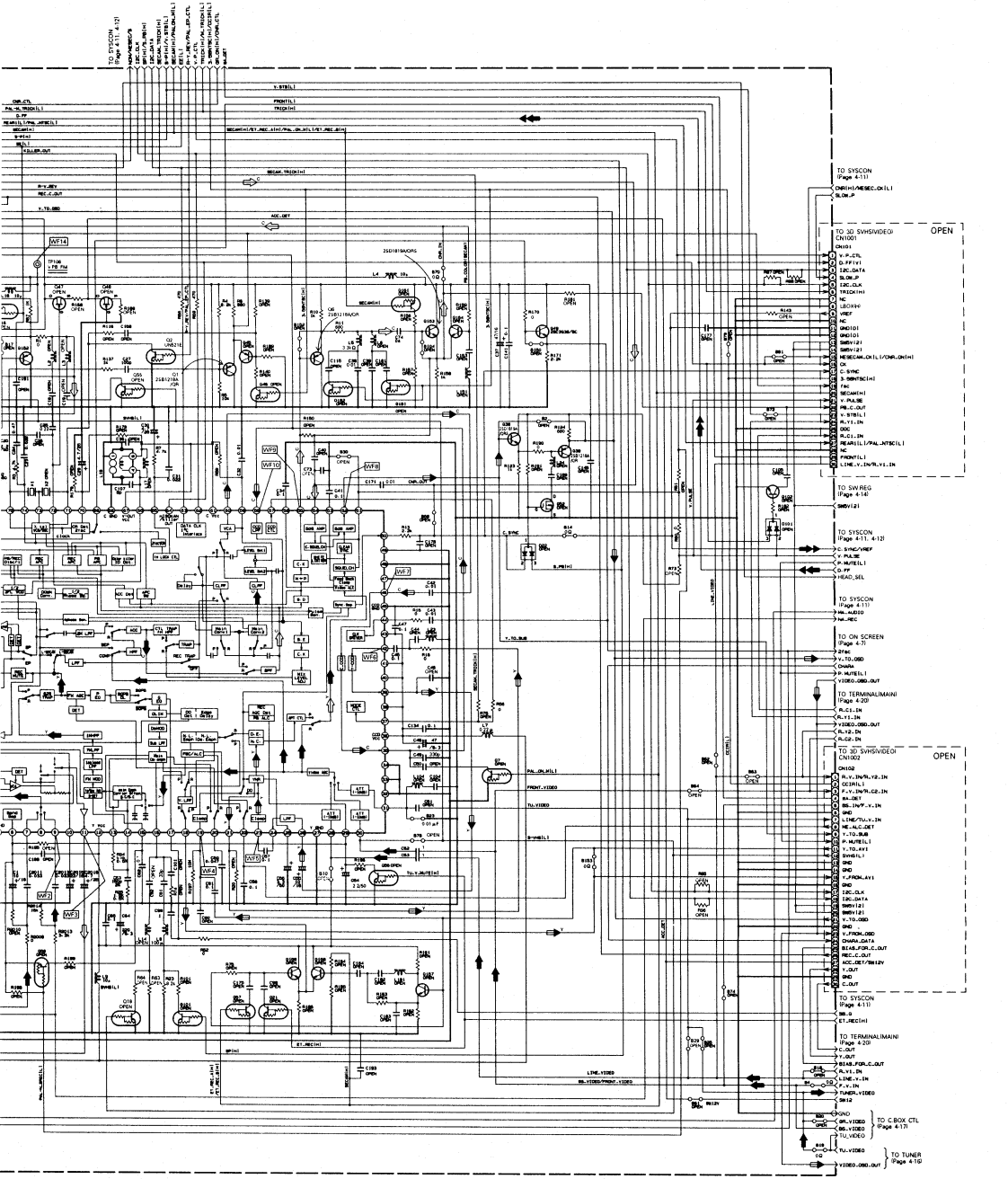
4.1 BOARD INTERCONNECTIONS

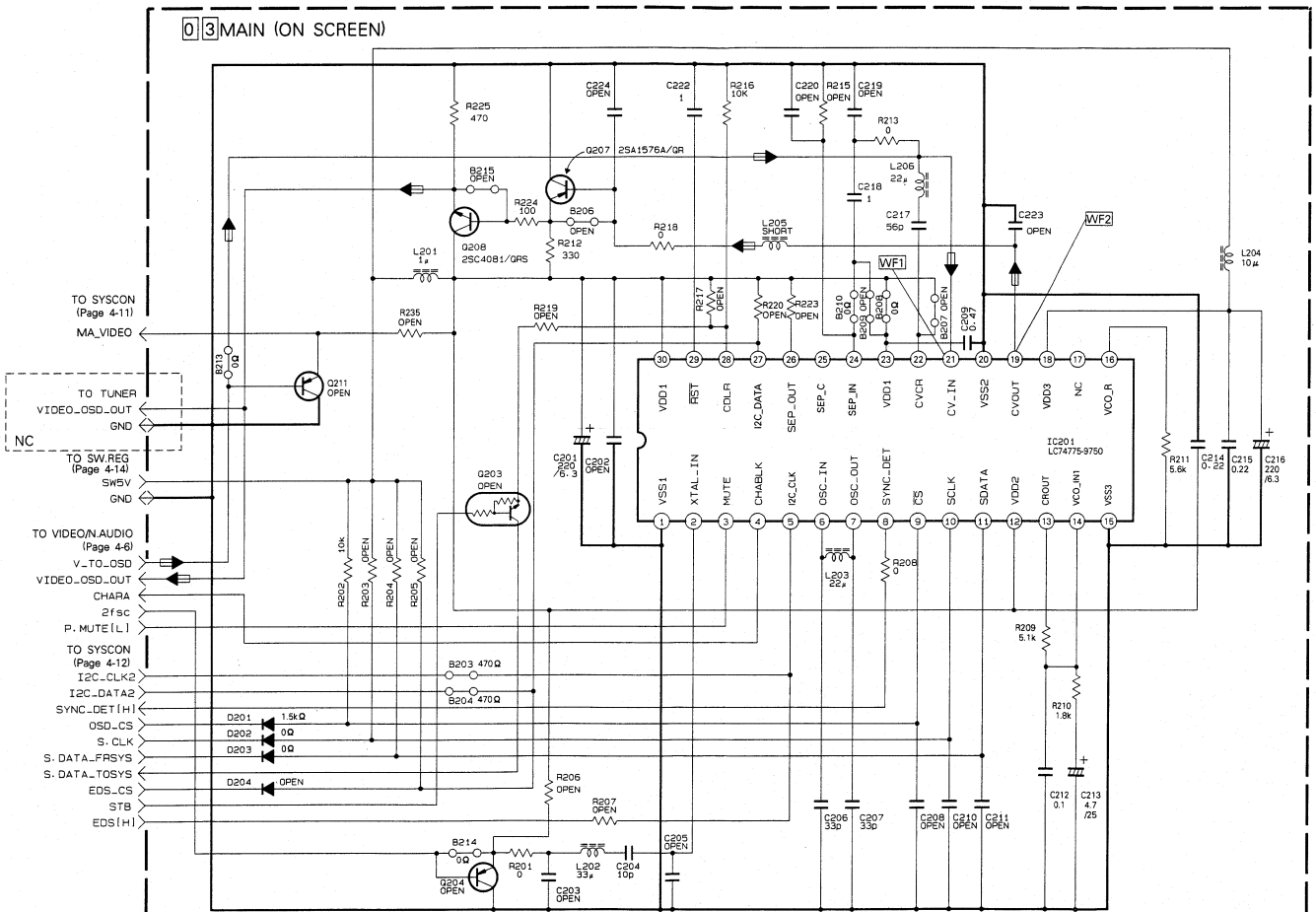

9 2 JUNCTION
9 4 JLIP
9 5 LANC/C. BOX
8 7 P/S CONVERTER
7 6 BS
9 6 GR
0 5 3D SVHS (VIDEO. 3D/TBC)
0 6 TERMINAL
0 3 MAIN
(VIDEO/N.AUDIO.ON SCREEN.FMA.VSC.SYSCON.TUNER.SW.REG.C.BOX_CTL.TERMINAL)
TUNER
1 4 DEMODU
HR-DD868EU
8 9 CNR
2 3 CA/MA
OPEN
OPEN
OPEN

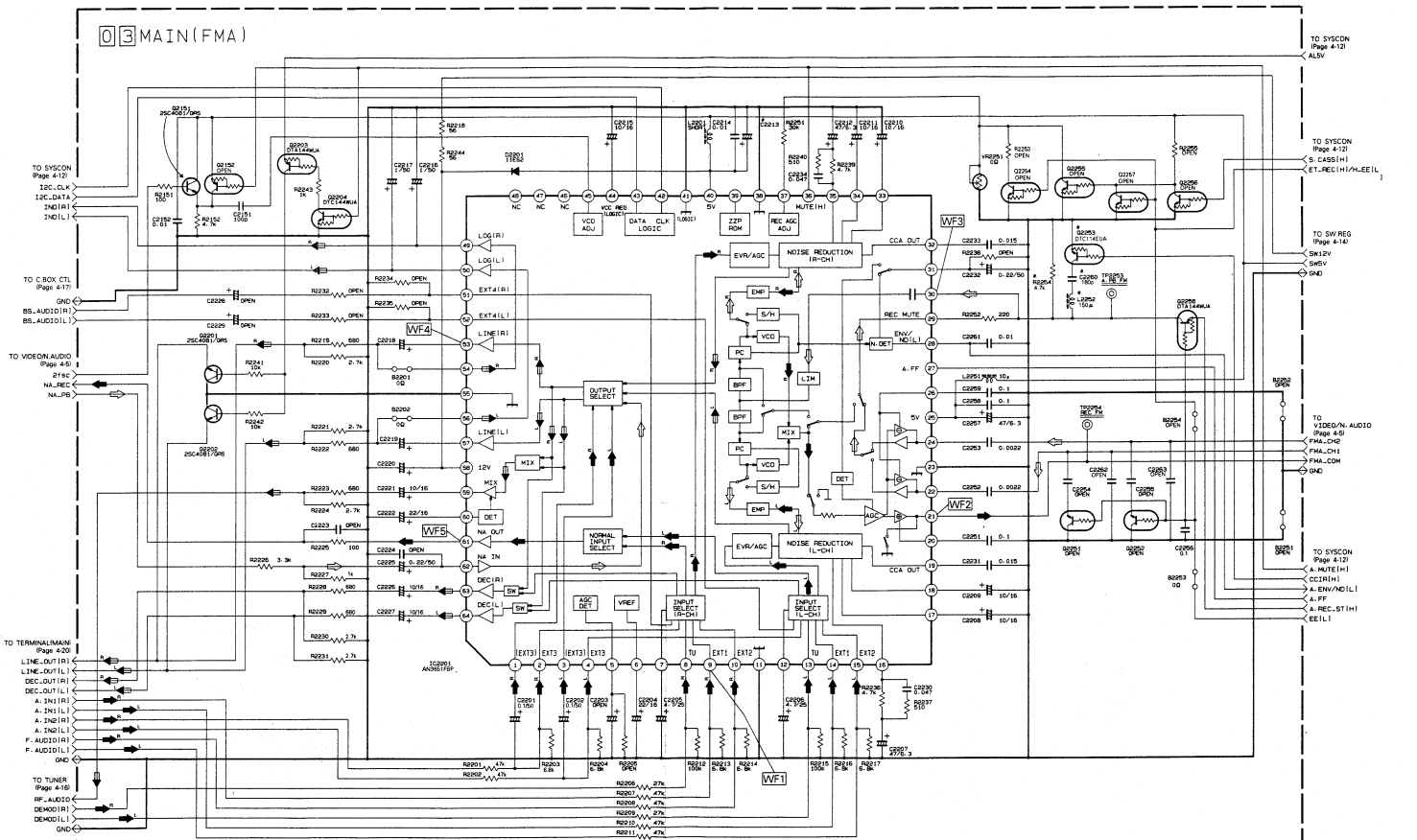
4.2 VIDEO/N.AUDIO SCHEMATIC DIAGRAM



NOTE : For VIDEO/N.AUDIO waveforms, please refer to page 4-23.


TO SYSCON
(Page 4-11)
TO 3D SVHS/VIDEO
CN1001
OPEN
TO SW REG
(Page 4-14)
TO SYSCON
(Page 4-11, 4-12)
TO SYSCON
(Page 4-11)
TO ON SCREEN
(Page 4-7)
TO TERMINAL(MAIN)
(Page 4-20)
TO 3D SVHS/VIDEO
CN1002
OPEN
TO SYSCON
(Page 4-11)
TO TERMINAL(MAIN)
(Page 4-20)
TO C.BOX CTL
(Page 4-17)
TO TUNER
(Page 4-16)

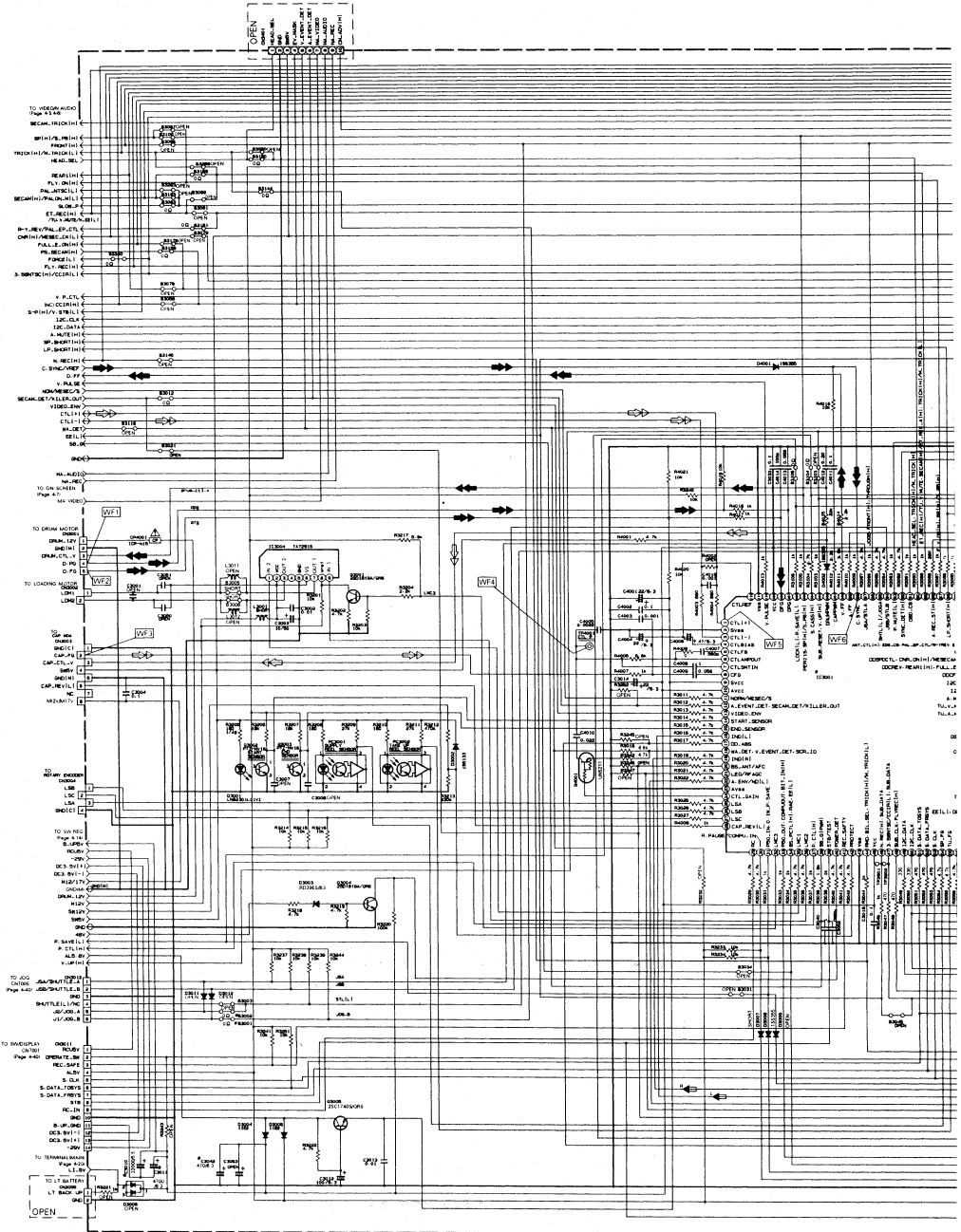

03 MAIN (ON SCREEN)
TO SYSCON (Page 4-11)
MA_VIDEO
TO TUNER
VIDEO_OSD_OUT
GND
NC
TO SW.REG (Page 4-14)
SW5V
GND
TO VIDEO/N.AUDIO (Page 4-6)
V_TO_OSD
VIDEO_OSD_OUT
CHARA
2fsc
P.MUTE[L]
TO SYSCON (Page 4-12)
I2C_CLK2
I2C_DATA2
SYNC_DET[H]
OSD_CS
S.CLK
S.DATA_FRSYS
S.DATA_TOSYS
EDS_CS
STB
EDS[H]
Q207 2SA1576A/GR
Q208 2SC4081/QRS
Q211 OPEN
Q203 OPEN
Q204 OPEN
IC201 LC74775-9750
VDD1 RST COLR I2C_DATA SEP_OUT SEP_C SEP_IN VDD1 CVCR CV_IN VSS2 CVOUT VDD3 NC VCO_R
VSS1 XTAL_IN MUTE CHABLK I2C_CLK OSC_IN OSC_OUT SYNC_DET CS SCLK SDATA VDD2 CROUT VCO_IN1 VSS3
WF1
WF2
NOTE: For ON SCREEN waveforms, please refer to page 4-23.



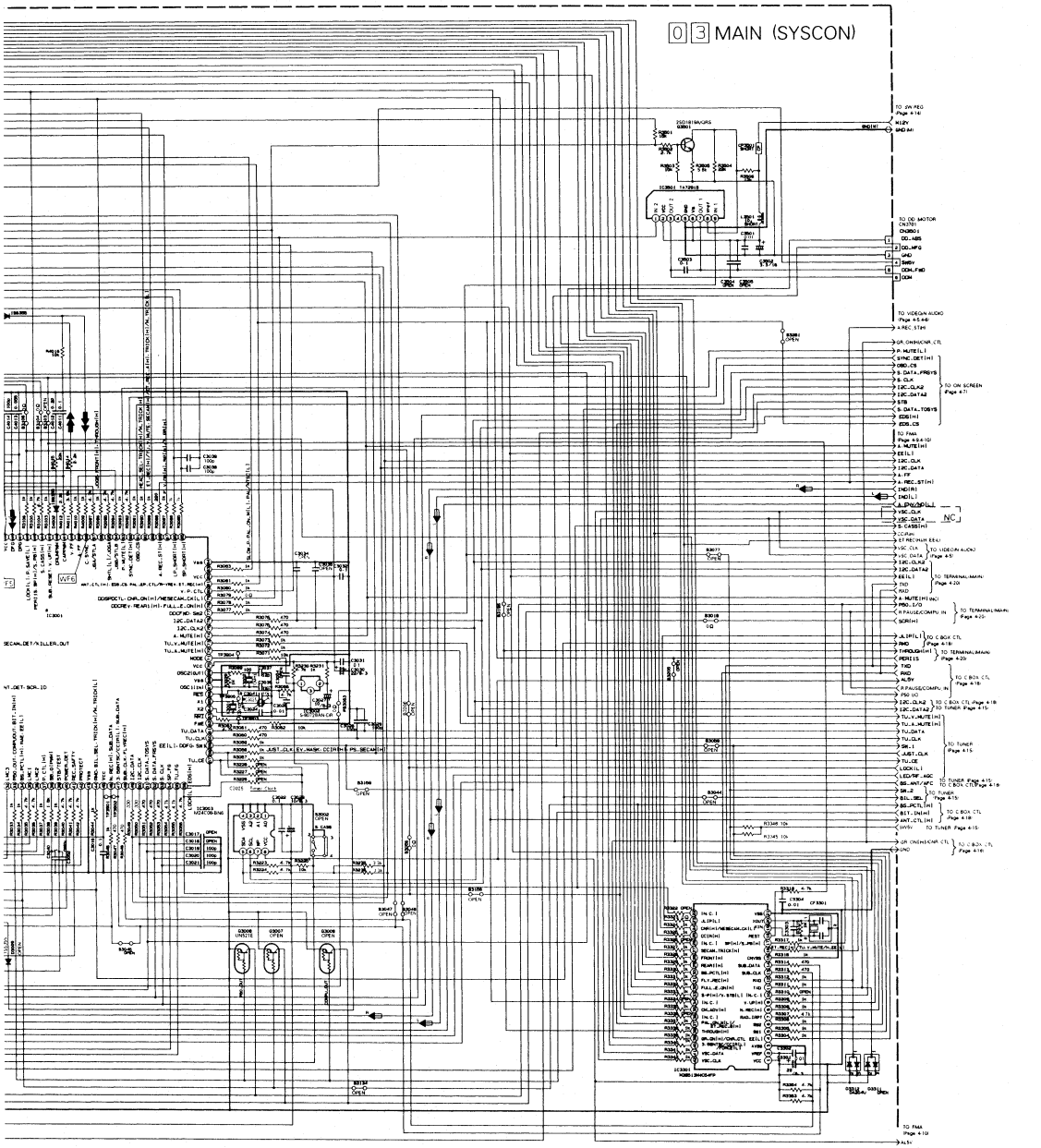
NOTES: 1. For FMA waveforms, please refer to page 4-23.
2. Comparison chart of models & marks(#).

	REF.NO.	C2260	L2252	R2254	Q2253
FMA	HR-DD865EK	NOT USED	NOT USED	NOT USED	NOT USED
	HR-DD868EU	USED	USED	USED	USED

4.5 SYSTEM CONTROL SCHEMATIC DIAGRAM



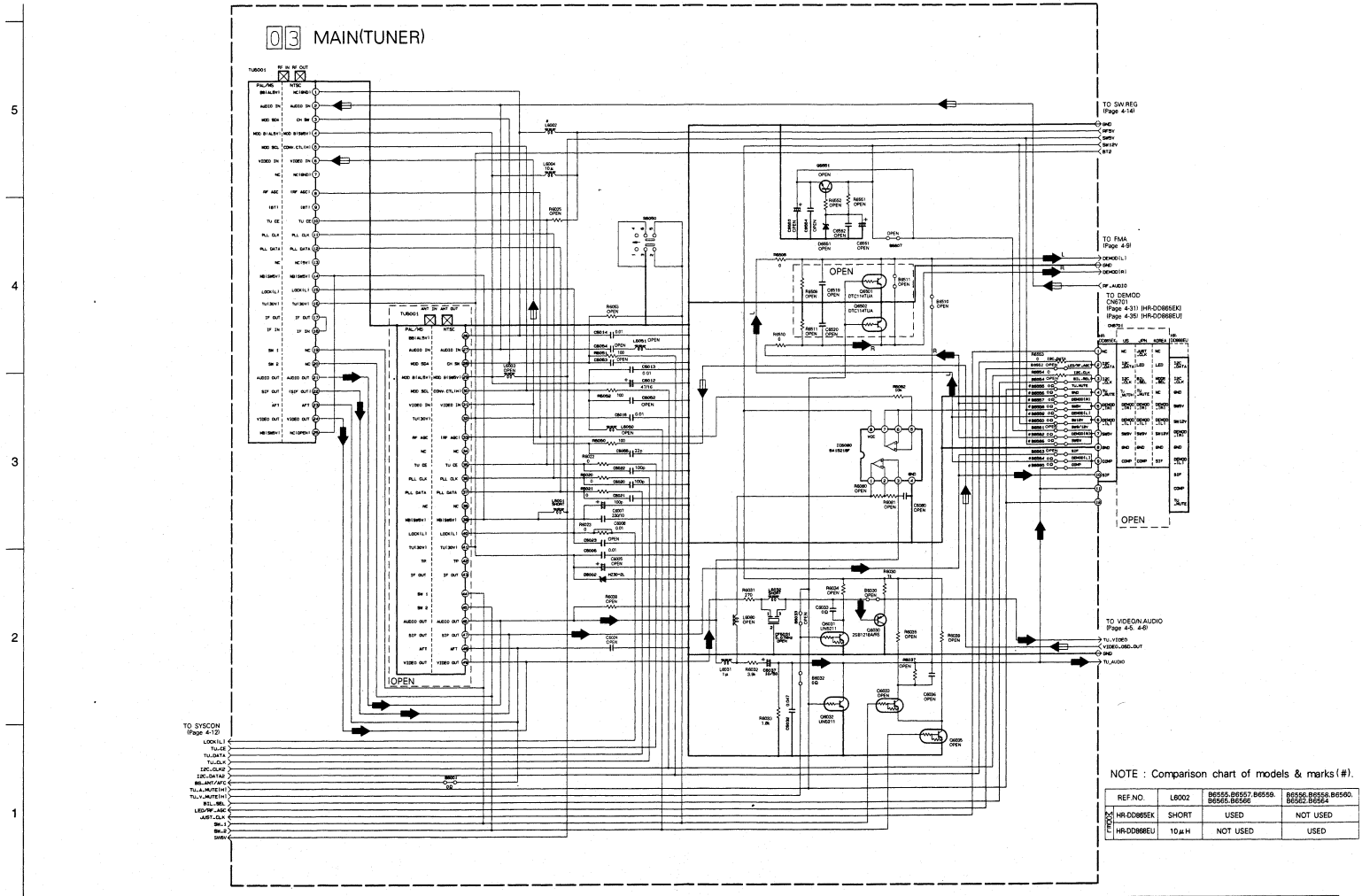
NOTES: 1. For SYSCON waveforms, please refer to page 4-23.
2. The SYSTEM CONTROL circuit of this model has an automatic recognition about the ON/OFF control of the DOCTOR SYSTEM.
3. Comparison chart of models



omparison chart of models & marks(#).

REF.NO		IC3001	C3010.C3025.C3042	C3011.C3041	C3024
MARK	HR-DD865EK	HD6432194A55F	NOT USED	USED	12pF
	HR-DD868EU	HD6432194A54F	USED	NOT USED	22pF

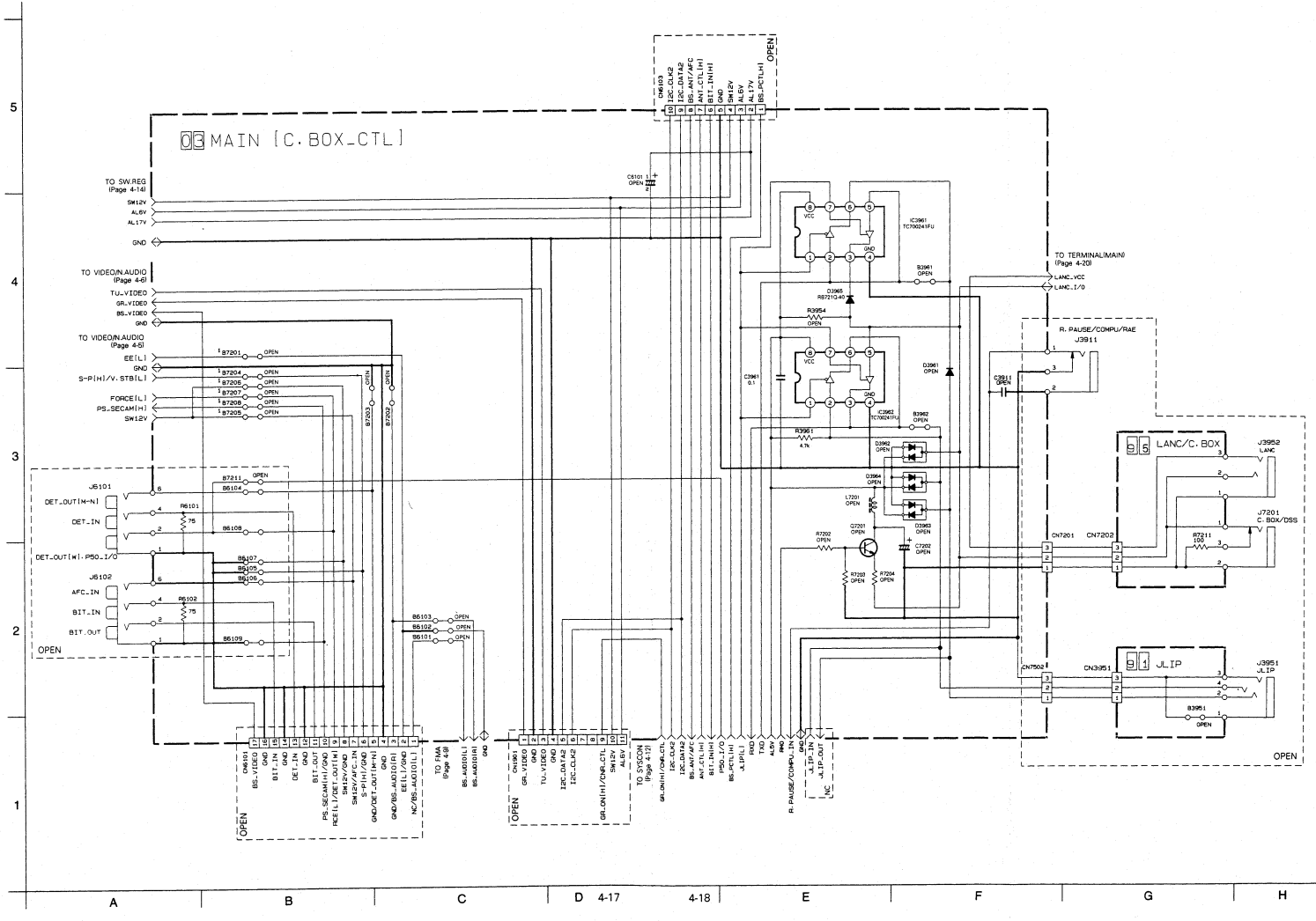
4.7 TUNER SCHEMATIC DIAGRAM



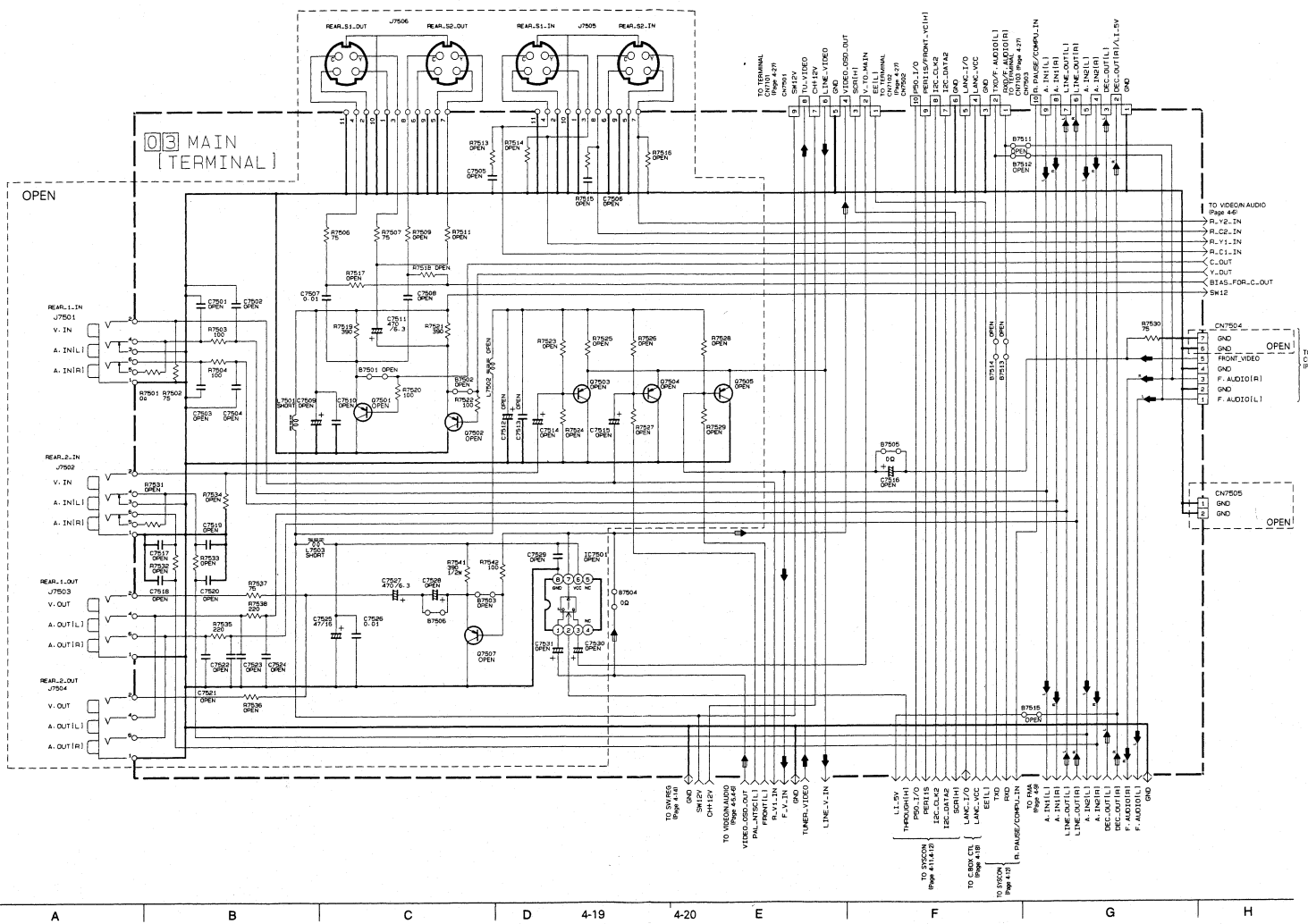
NOTE : Comparison chart of models & marks (#).

	REF.NO.	L6002	B6555,B6557,B6559, B6565,B6566	B6556,B6558,B6560, B6562,B6564
mark	HR-DD865EK	SHORT	USED	NOT USED
	HR-DD868EU	10μH	NOT USED	USED

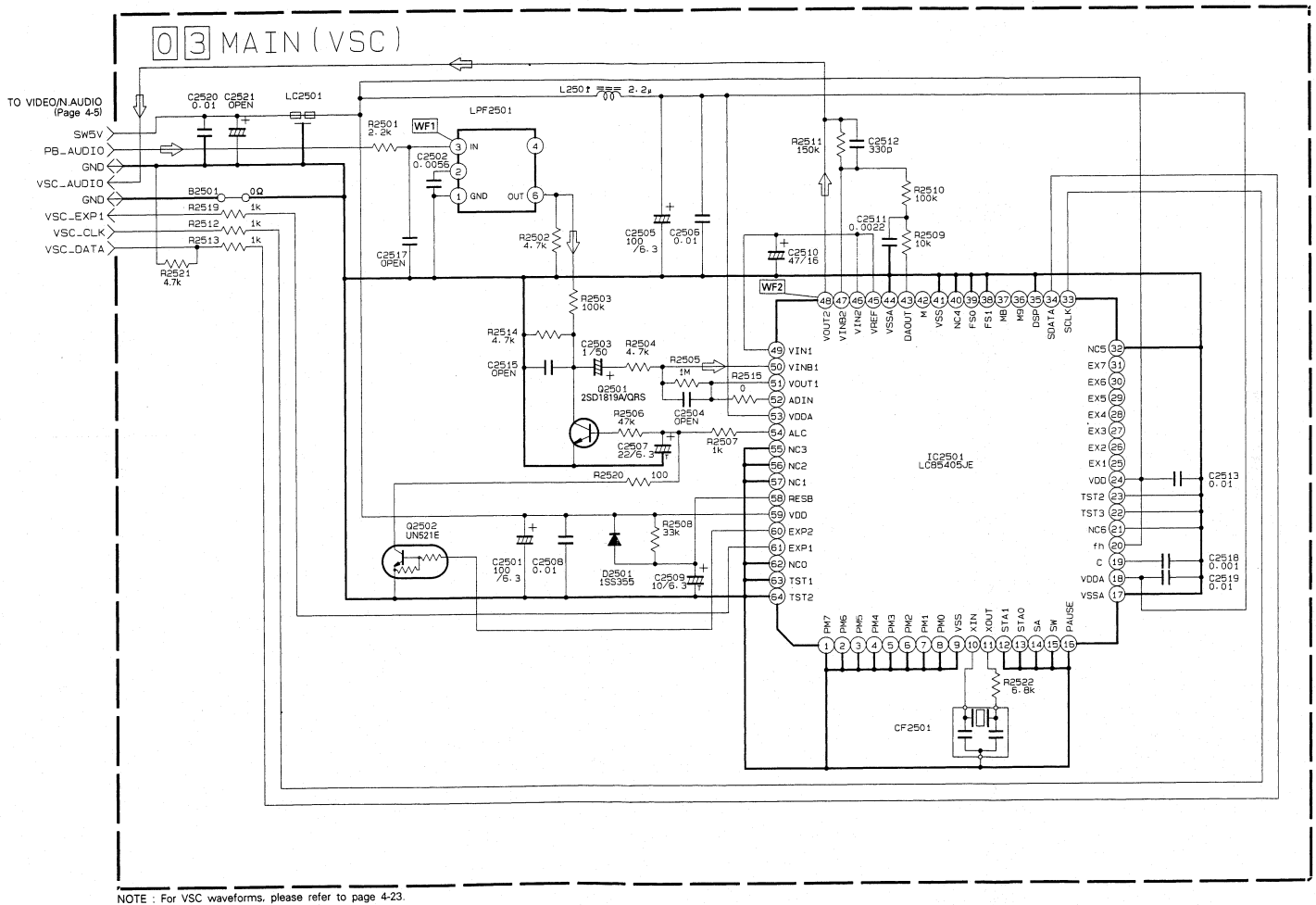
4.8 C.BOX CTL SCHEMATIC DIAGRAM



4.9 TERMINAL(MAIN) SCHEMATIC DIAGRAM



4.10 VSC SCHEMATIC DIAGRAM

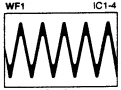


NOTE : For VSC waveforms, please refer to page 4-23.

WAVEFORMS

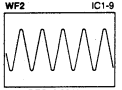
— VIDEO/N.AUDIO —

WF1 IC1-4



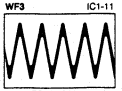
REC 0.7 Vp-p
20 mV/0.5 msec/DIV

WF2 IC1-9



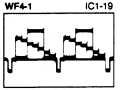
REC 0.09 Vp-p
2 mV/0.5 msec/DIV

WF3 IC1-11



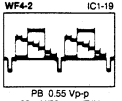
PB 0.48 Vp-p
10 mV/0.5 msec/DIV

WF4-1 IC1-19



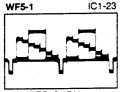
REC 0.5 Vp-p
20 mV/20 µsec/DIV

WF4-2 IC1-19



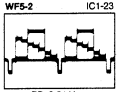
PB 0.55 Vp-p
20 mV/20 µsec/DIV

WF5-1 IC1-23



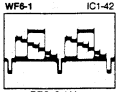
REC 0.47 Vp-p
20 mV/20 µsec/DIV

WF5-2 IC1-23



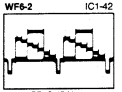
PB 0.54 Vp-p
20 mV/20 µsec/DIV

WF6-1 IC1-42



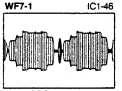
REC 0.4 Vp-p
10 mV/20 µsec/DIV

WF5-2 IC1-42



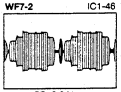
PB 0.45 Vp-p
10 mV/20 µsec/DIV

WF7-1 IC1-46



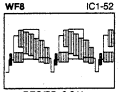
REC 0.3 Vp-p
10 mV/20 µsec/DIV

WF7-2 IC1-46



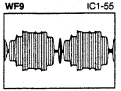
PB 0.3 Vp-p
10 mV/20 µsec/DIV

WF8 IC1-52



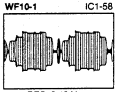
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF9 IC1-55



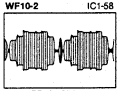
PB 0.6 Vp-p
20 mV/20 µsec/DIV

WF10-1 IC1-58



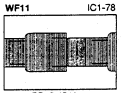
REC 0.48 Vp-p
10 mV/20 µsec/DIV

WF10-2 IC1-58



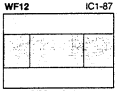
PB 0.48 Vp-p
10 mV/20 µsec/DIV

WF11 IC1-78



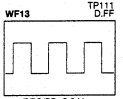
PB 0.45 Vp-p
10 mV/5 msec/DIV

WF12 IC1-87



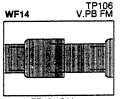
REC 1.3 Vp-p
50 mV/1 msec/DIV

WF13 TP111 D.FF



REC/PB 5.2 Vp-p
0.2 V/10 msec/DIV

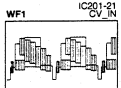
WF14 TP106 V.PB FM



PB 0.45 Vp-p
10 mV/5 msec/DIV

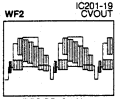
— ON SCREEN —

WF1 IC201-21 CV_IN



REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

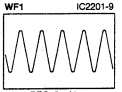
WF2 IC201-19 CVOUT



REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

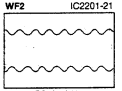
— FMA —

WF1 IC2201-9



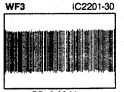
REC 0.1 Vp-p
2 mV/0.5 msec/DIV

WF2 IC2201-21



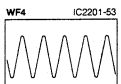
REC 0.43 Vp-p
10 mV/1 msec/DIV

WF3 IC2201-30



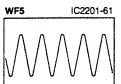
PB 0.36 Vp-p
10 mV/5 msec/DIV

WF4 IC2201-53



REC/PB 1.08 Vp-p
20 mV/0.5 msec/DIV

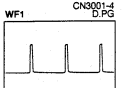
WF5 IC2201-61



REC 0.12 Vp-p
2 mV/0.5 msec/DIV

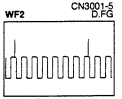
— SYSCON —

WF1 CN3001-4 D.PG



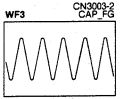
REC/PB 4.8 Vp-p
0.2 V/10 msec/DIV

WF2 CN3001-5 D.FG



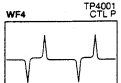
REC/PB 4.5 Vp-p
0.1 V/5 msec/DIV

WF3 CN3003-2 CAP_FG



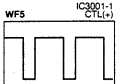
REC/PB 2.2 Vp-p
50 mV/0.5 msec/DIV

WF4 TP4001 CTL P



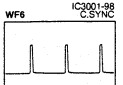
PB 2.2 Vp-p
50 mV/10 msec/DIV

WF5 IC3001-1 CTL(+)



REC 4.0 Vp-p
0.1 V/10 msec/DIV

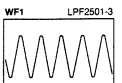
WF6 IC3001-98 C.SYNC



REC/PB 3.5 Vp-p
0.1 V/20 µsec/DIV

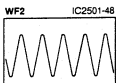
— VSC —

WF1 LPF2501-3



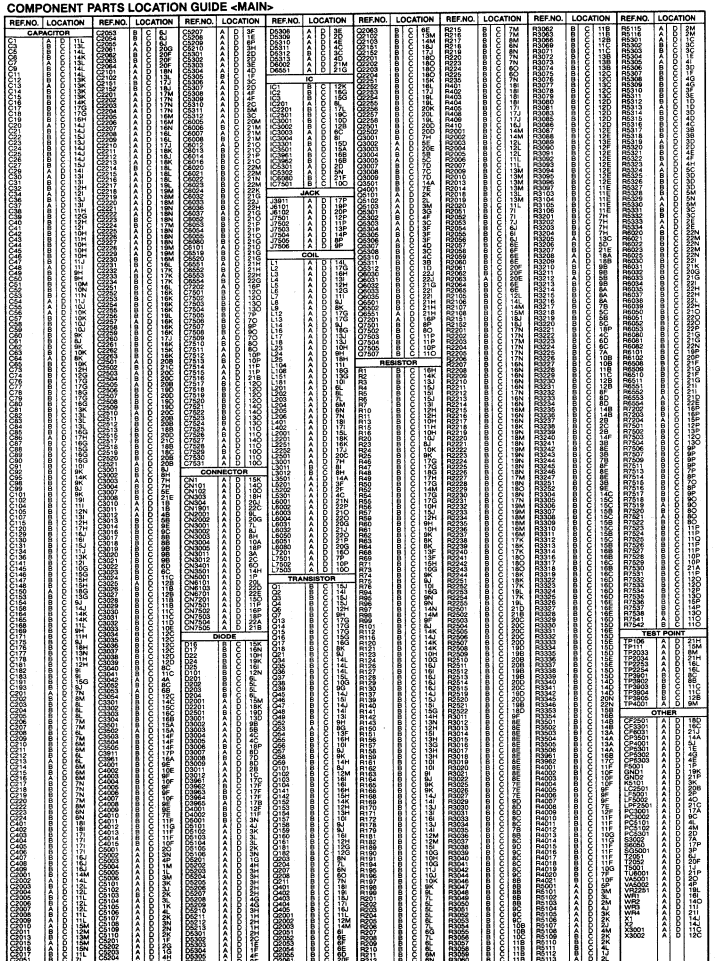
PB 0.3 Vp-p
5 mV/0.5 msec/DIV

WF2 IC2501-48

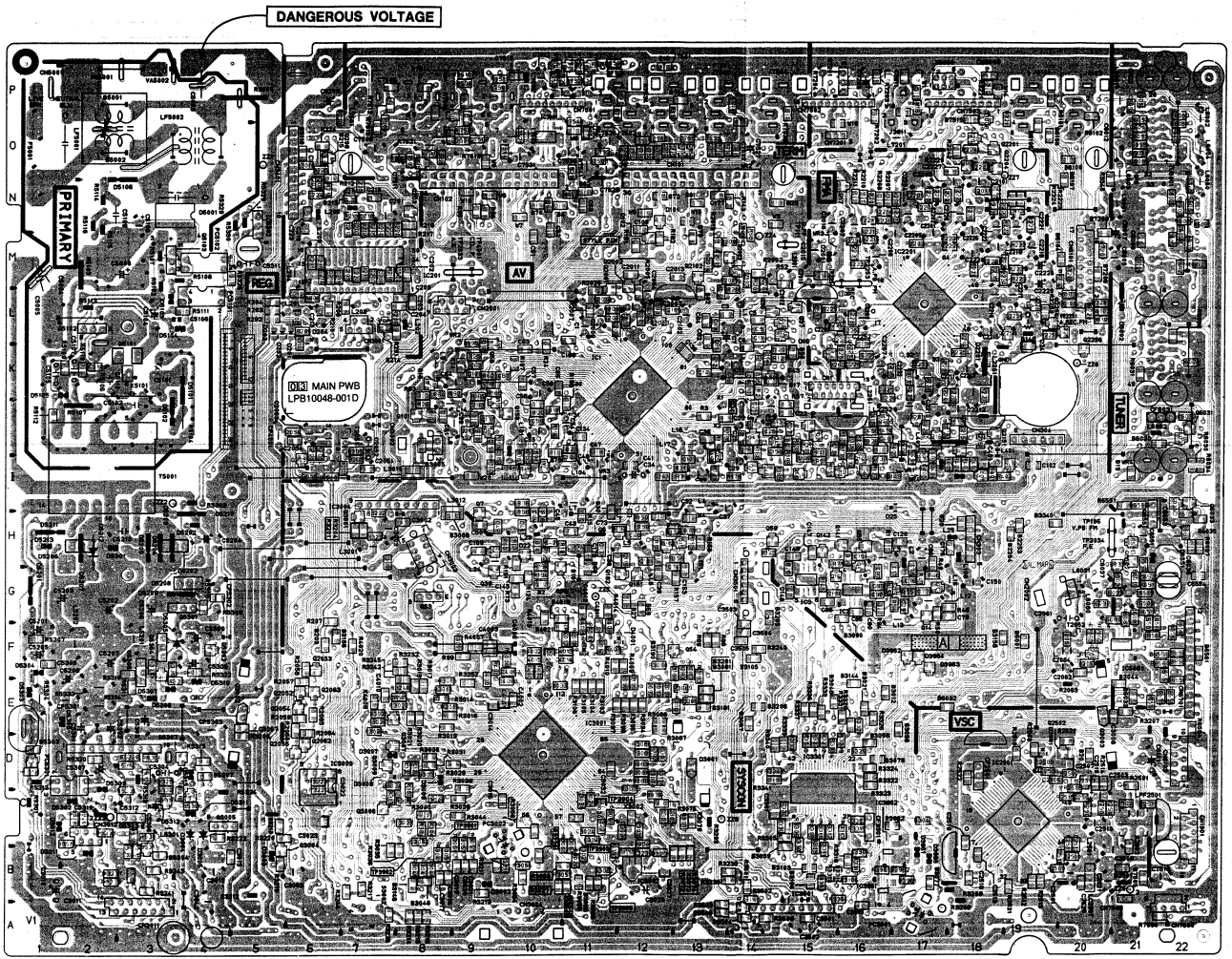


PB 0.6 Vp-p
10 mV/0.5 msec/DIV

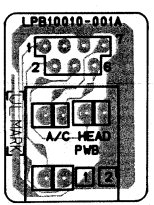
COMPONENT PARTS LOCATION GUIDE <MAIN>



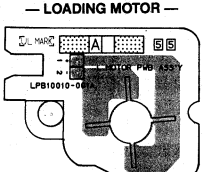
4.11 MAIN, A/C HEAD AND LOADING MOTOR CIRCUIT BOARDS



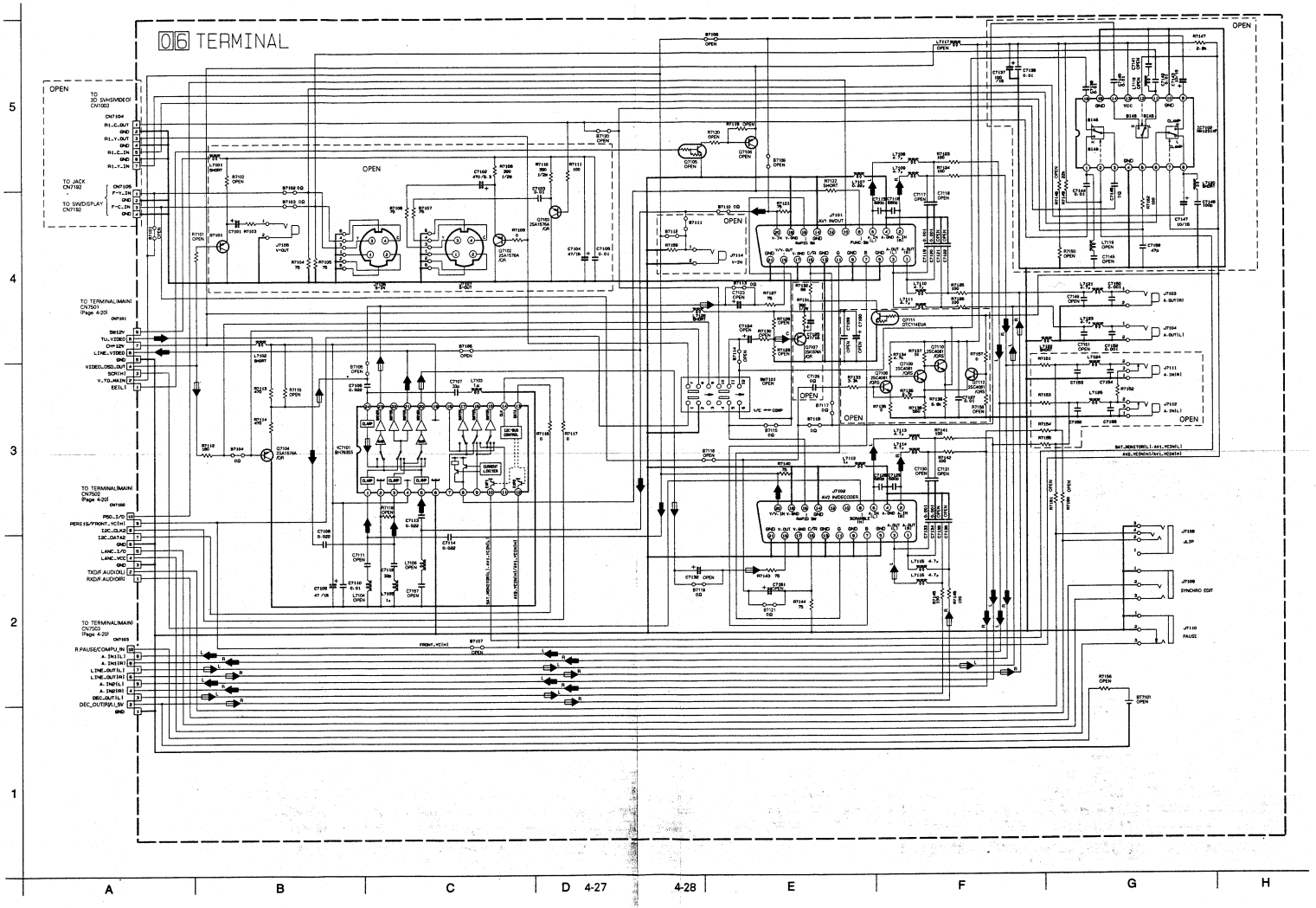
— A/C HEAD —



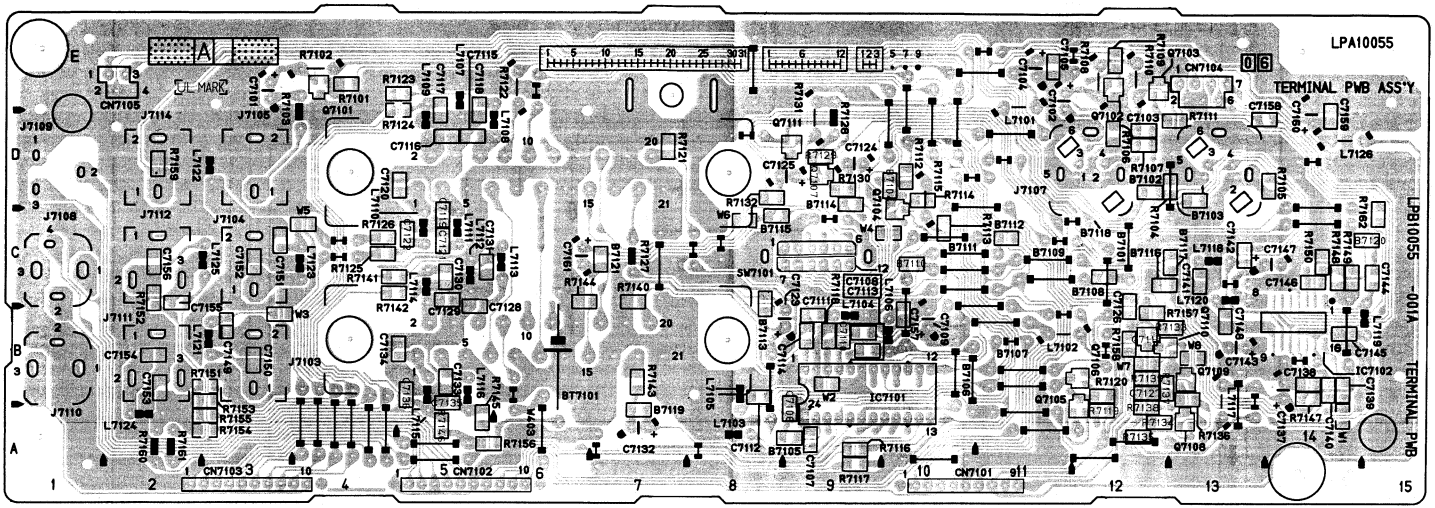
— LOADING MOTOR —



4.12 TERMINAL SCHEMATIC DIAGRAM

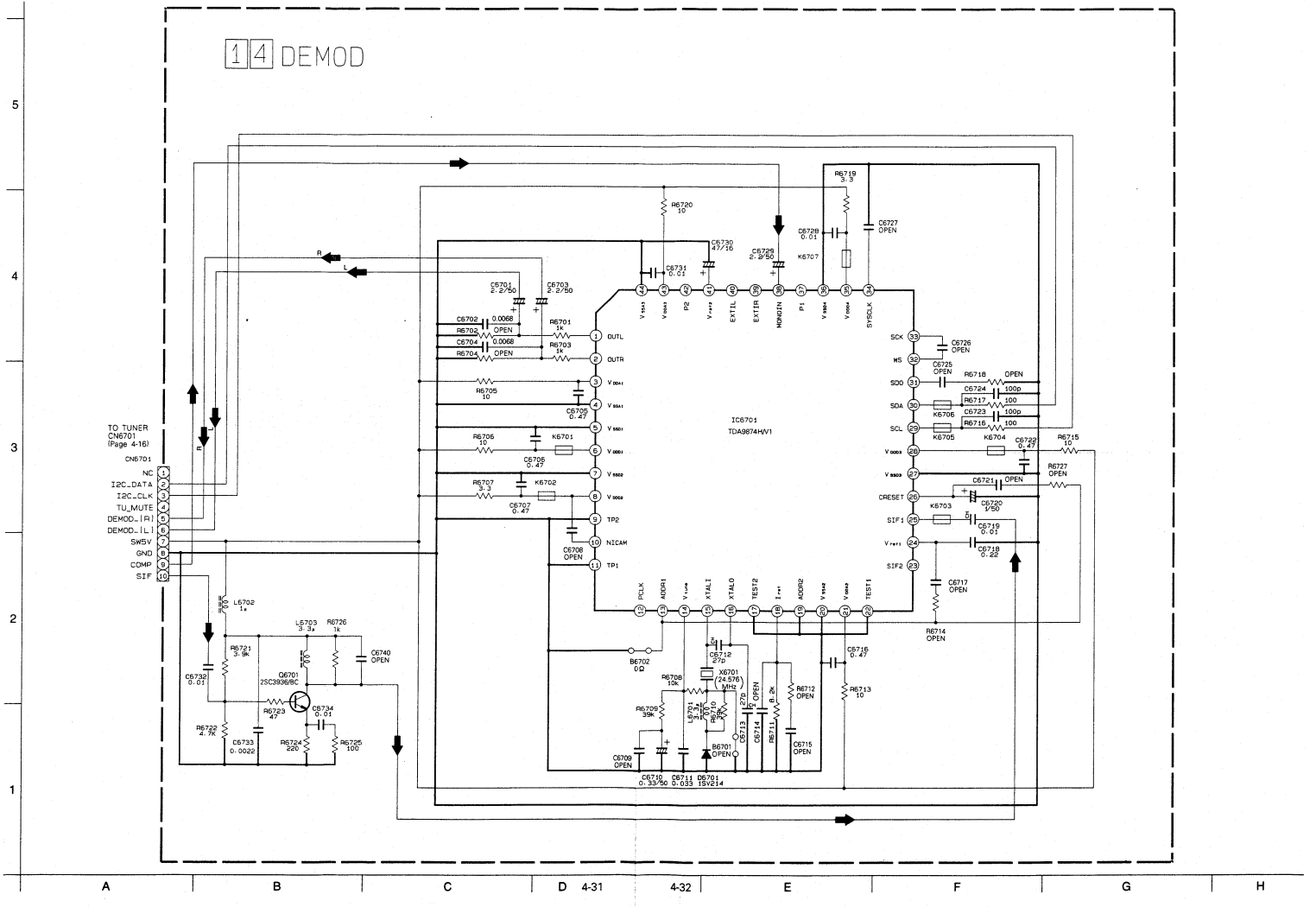


4.13 TERMINAL CIRCUIT BOARD

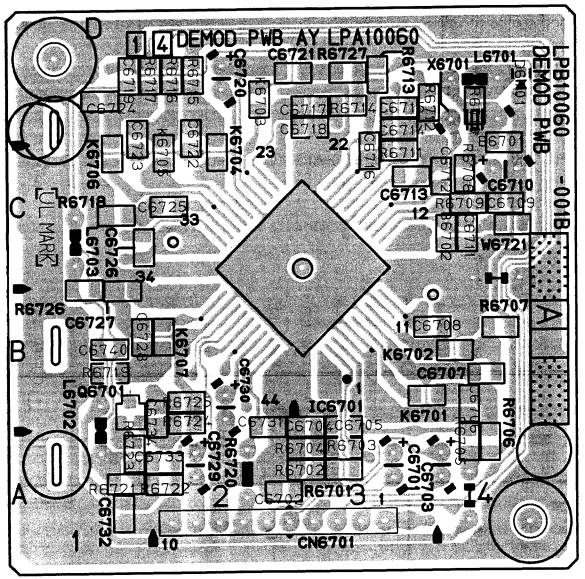


COMPONENT PARTS LOCATION GUIDE <TERMINAL>

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		C7128	B C 5C	C7156	B C 2C	J7111	A D 2B	L7125	A D 3C	R7112	B C 10D	R7140	B C 7C
C7101	A D 3E	C7129	B C 5C	C7157	B C 10B	J7112	A D 2C	L7126	A D 14D	R7113	B C 10C	R7141	B C 4C
C7102	A D 11E	C7130	B C 5C	C7158	B C 13D	J7114	A D 2D	**TRANSISTOR**		R7114	B C 10D	R7142	B C 4C
C7103	B C 12D	C7131	B C 5C	C7159	B C 14D	**COIL**		Q7101	B C 4E	R7115	A D 10C	R7143	B C 7B
C7104	A D 11E	C7132	A D 7A	C7160	A D 14D	L7101	A D 11E	Q7102	B C 12E	R7116	B C 9A	R7144	B C 6C
C7105	B C 11E	C7133	B C 5B	C7161	A D 6C	L7102	A D 12B	Q7103	B C 12E	R7117	B C 9A	R7145	B C 5A
C7106	B C 9A	C7134	B C 5B	**CONNECTOR**		L7103	A D 8A	Q7104	B C 10D	R7118	B C 9B	R7146	B C 5A
C7107	B C 9A	C7135	B C 5B	CN7101	A D 10A	L7104	A D 9B	Q7105	B C 12B	R7119	B C 12A	R7147	B C 14B
C7108	B C 9B	C7136	B C 5B	CN7102	A D 5A	L7105	A D 8A	Q7106	B C 12B	R7120	B C 12B	R7148	B C 14C
C7109	A D 10B	C7137	A D 14B	CN7103	A D 2A	L7106	A D 10B	Q7107	B C 9D	R7121	B C 7D	R7149	B C 14C
C7110	B C 9B	C7138	B C 14B	CN7104	A D 13E	L7107	A D 5E	Q7108	B C 13A	R7122	A D 6E	R7150	B C 14C
C7111	B C 9B	C7139	B C 14B	CN7105	A D 2E	L7108	A D 5D	Q7109	B C 13B	R7123	B C 5E	R7151	B C 3B
C7112	B C 8B	C7140	B C 14B	**IC**		L7109	A D 5D	Q7110	B C 12B	R7124	B C 5E	R7152	B C 2C
C7113	B C 9B	C7141	B C 13C	IC7101	A D 9B	L7110	A D 5C	Q7111	B C 9D	R7125	B C 4C	R7153	B C 3B
C7114	B C 9B	C7142	B C 13C	IC7102	B C 14B	L7111	A D 5C	Q7112	B C 12B	R7126	B C 4C	R7154	B C 3A
C7115	B C 5D	C7143	A D 13B	**JACK**		L7112	A D 5C	**RESISTOR**		R7127	A D 7C	R7155	B C 3A
C7116	B C 5D	C7144	B C 15C	J7101	A D 6D	L7113	A D 6C	R7101	B C 4E	R7128	A D 9E	R7156	B C 5A
C7117	B C 5E	C7145	B C 14B	J7102	A D 6B	L7114	A D 5C	R7102	A D 3E	R7129	B C 9D	R7157	B C 12B
C7118	B C 5E	C7146	B C 14C	J7103	A D 3B	L7115	A D 5B	R7103	A D 3E	R7130	B C 9D	R7158	B C 12B
C7119	B C 5C	C7147	A D 13C	J7104	A D 3C	L7116	A D 5B	R7104	B C 12D	R7131	A D 9D	R7159	B C 2D
C7120	B C 5D	C7148	B C 13B	J7105	A D 3D	L7117	A D 13A	R7105	B C 14D	R7132	B C 8D	R7160	A D 2A
C7121	B C 5C	C7149	B C 3B	J7106	A D 13D	L7118	A D 13C	R7106	B C 12D	R7133	B C 13B	R7161	A D 2A
C7122	B C 5C	C7150	B C 3B	J7107	A D 12D	L7119	A D 15B	R7107	B C 12D	R7134	B C 12A	R7162	B C 15C
C7123	A D 9B	C7151	B C 3C	J7108	A D 1C	L7120	A D 13C	R7108	A D 12E	R7135	B C 12A	**OTHER**	
C7124	A D 9D	C7152	B C 3C	J7109	A D 1D	L7121	A D 3B	R7109	B C 12E	R7136	B C 13B	BT7101	A D 6B
C7125	A D 9D	C7153	B C 2B	J7110	A D 1B	L7122	A D 3D	R7110	A D 12E	R7137	B C 12B	SW7101	A D 9C
C7126	B C 12C	C7154	B C 2B			L7123	A D 4C	R7111	B C 13D	R7138	B C 12A		
C7127	B C 12B	C7155	B C 2C			L7124	A D 2A			R7139	B C 12B		


14 DEMOD
IC6701
TDA9874HW1
TO_TUNER
CN6701
(Page 4-16)
CN6701
NC
I2C_DATA
I2C_CLK
TU_MUTE
DEMOD_[A]
DEMOD_[L]
SW5V
GND
COMP
SIF
OUTL
OUTR
SCK
WS
SDO
SDA
SCL
CRESET
SIF1
SIF2
SYSCLK
PCLK
XTALI
XTALO
TEST1
TEST2
NICAM
TP1
TP2
EXTIL
EXTIR
MONOIN
P1
P2
Q6701
2SC3936/8C
X6701
(24.576) MHz
B6701
B6702
K6701
K6702
K6703
K6704
K6705
K6706
K6707
L6701
L6702
L6703

4.15 DEMODULATOR CIRCUIT BOARD [HR-DD865EK]

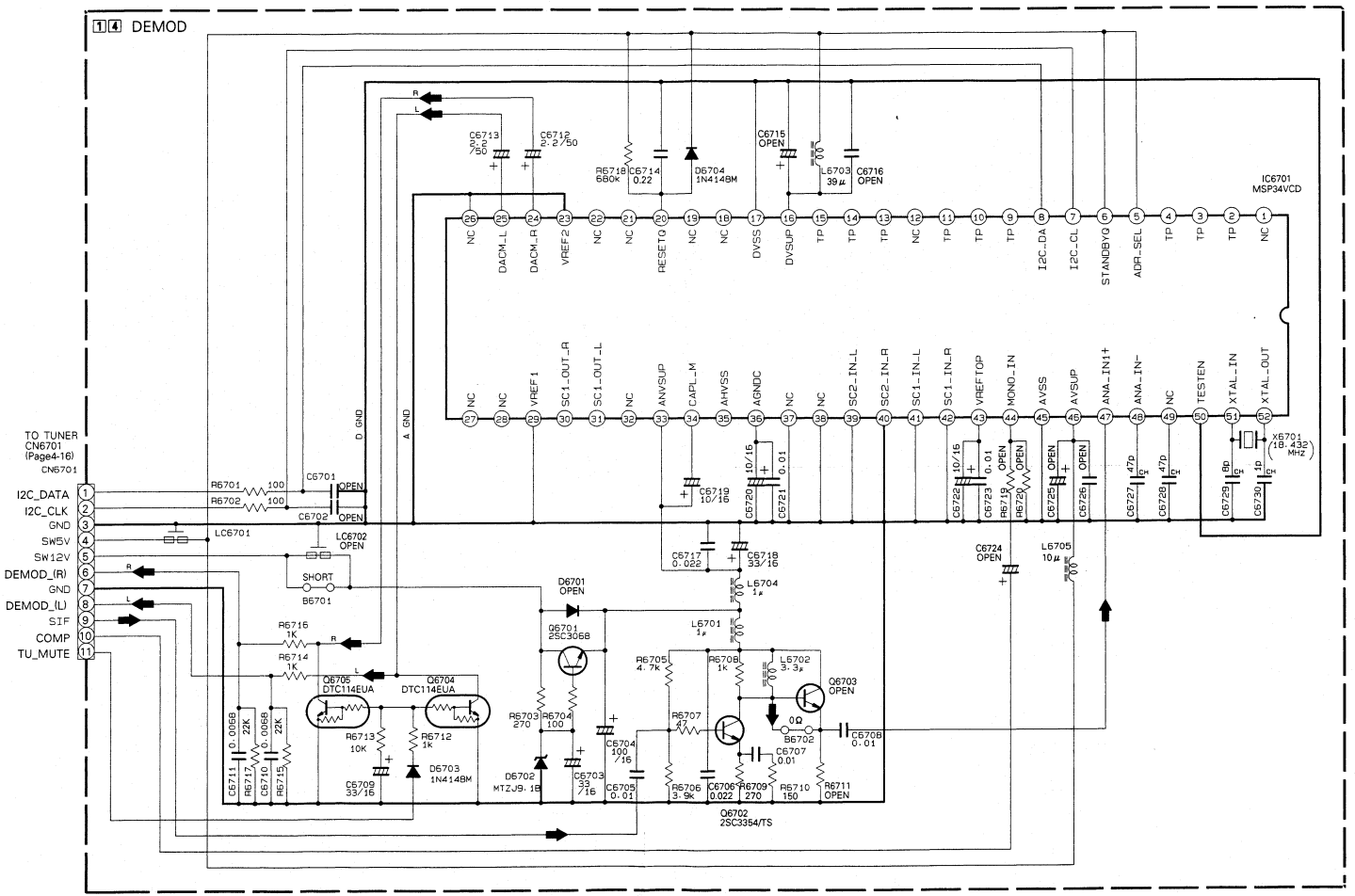


COMPONENT PARTS LOCATION GUIDE <DEMODULATOR> [HR-DD865EK]

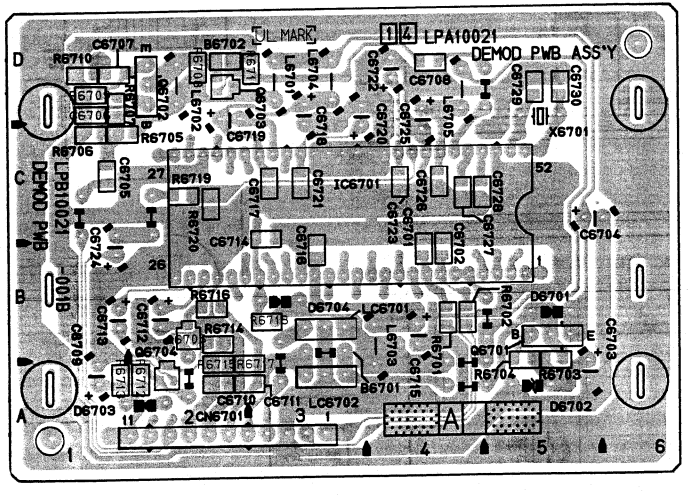
REF.NO.	LOCATION
CAPACITOR	
C6701	A D 3A
C6702	B C 2A
C6703	A D 4A
C6704	B C 3B
C6705	B C 3B
C6706	B C 4B
C6707	B C 4B
C6708	B C 3B
C6709	B C 4C
C6710	A D 4C
C6711	B C 4C
C6712	B C 4C
C6713	B C 3C
C6714	B C 3D
C6715	B C 3D
C6716	B C 3C
C6717	B C 3D
C6718	B C 3D
C6719	B C 1D
C6720	A D 2D
C6721	B C 3D
C6722	B C 2D
C6723	B C 1D
C6724	B C 1D
C6725	B C 2C
C6726	B C 1C
C6727	B C 1B
C6728	B C 1B
C6729	A D 2A
C6730	A D 2B
C6731	B C 2B
C6732	B C 1A
C6733	B C 2A
C6734	B C 2B
C6740	B C 1B

REF.NO.	LOCATION
CONNECTOR	
CN6701	A D 3A
DIODE	
D6701	B C 4D
IC	
IC6701	B C 3C
COIL	
L6701	A D 4D
L6702	A D 1A
L6703	A D 1C
TRANSISTOR	
Q6701	B C 1B

REF.NO.	LOCATION
RESISTOR	
R6701	B C 3A
R6702	B C 3A
R6703	B C 3A
R6704	B C 3A
R6705	B C 4A
R6706	B C 4A
R6707	B C 4B
R6708	B C 4C
R6709	B C 4C
R6710	B C 4D
R6711	B C 3C
R6712	B C 3D
R6713	B C 3D
R6714	B C 3D
R6715	B C 2D
R6716	B C 2D
R6717	B C 2D
R6718	B C 1C
R6719	B C 1B
R6720	A D 2A
R6721	B C 1A
R6722	B C 2A
R6723	B C 1A
R6724	B C 2B
R6725	B C 2B
R6726	B C 1B
R6727	B C 3D
OTHER	
K6701	B C 3B
K6702	B C 4B
K6703	B C 2D
K6704	B C 2C
K6705	B C 2C
K6706	B C 1C
K6707	B C 2B
X6701	A D 4D


14 DEMOD
IC6701
MSP34VCD
TO TUNER
CN6701
(Page4-16)
CN6701
I2C_DATA
I2C_CLK
GND
SW5V
SW12V
DEMOD_(R)
GND
DEMOD_(L)
SIF
COMP
TU_MUTE
D GND
A GND
R6701 100
R6702 100
C6701 OPEN
C6702 OPEN
LC6701
LC6702 OPEN
SHORT
B6701
C6713 2.2/50
C6712 2.2/50
R6718 680K
C6714 0.22
D6704 1N4148M
C6715 OPEN
L6703 39µ
C6716 OPEN
NC
DACM_L
DACM_R
VREF2
RESETQ
DVSS
DVSUP
I2C_DA
I2C_CL
STANDBYQ
ADR_SEL
VREF1
SC1_OUT_R
SC1_OUT_L
ANVSUP
CAPL_M
AHVSS
AGNDC
SC2_IN_L
SC2_IN_R
SC1_IN_L
SC1_IN_R
VREFTOP
MONO_IN
AVSS
AVSUP
ANA_IN1+
ANA_IN-
TESTEN
XTAL_IN
XTAL_OUT
TP
X6701 18.432 MHz
C6719 10/16
C6720 10/16
C6721 0.01
C6722 10/16
C6723 0.01
R6719 OPEN
R6720 OPEN
C6725 OPEN
C6726 OPEN
C6727 47p
C6728 47p
C6729 8p
C6730 15p
C6717 0.022
C6718 33/16
L6704 1µ
L6701 1µ
C6724 OPEN
L6705 10µ
D6701 OPEN
Q6701 2SC3068
R6716 1K
R6714 1K
Q6705 DTC114EUA
Q6704 DTC114EUA
R6713 10K
R6712 1K
C6709 33/16
D6703 1N4148M
C6711 0.0068
R6717 22K
C6710 0.0068
R6715 22K
D6702 MTZJ9.1B
R6703 270
R6704 100
C6703 33/16
C6704 100/16
C6705 0.01
R6705 4.7K
R6708 1K
L6702 3.3µ
Q6703 OPEN
R6707 47
0Ω
B6702
C6707 0.01
C6708 0.01
R6706 3.9K
C6706 0.022
R6709 270
R6710 150
R6711 OPEN
Q6702 2SC3354/TS
A
B
C
D
4-35
4-36
E
F
G
H
1
2
3
4
5

4.17 DEMODULATOR CIRCUIT BOARD [HR-DD868EU]



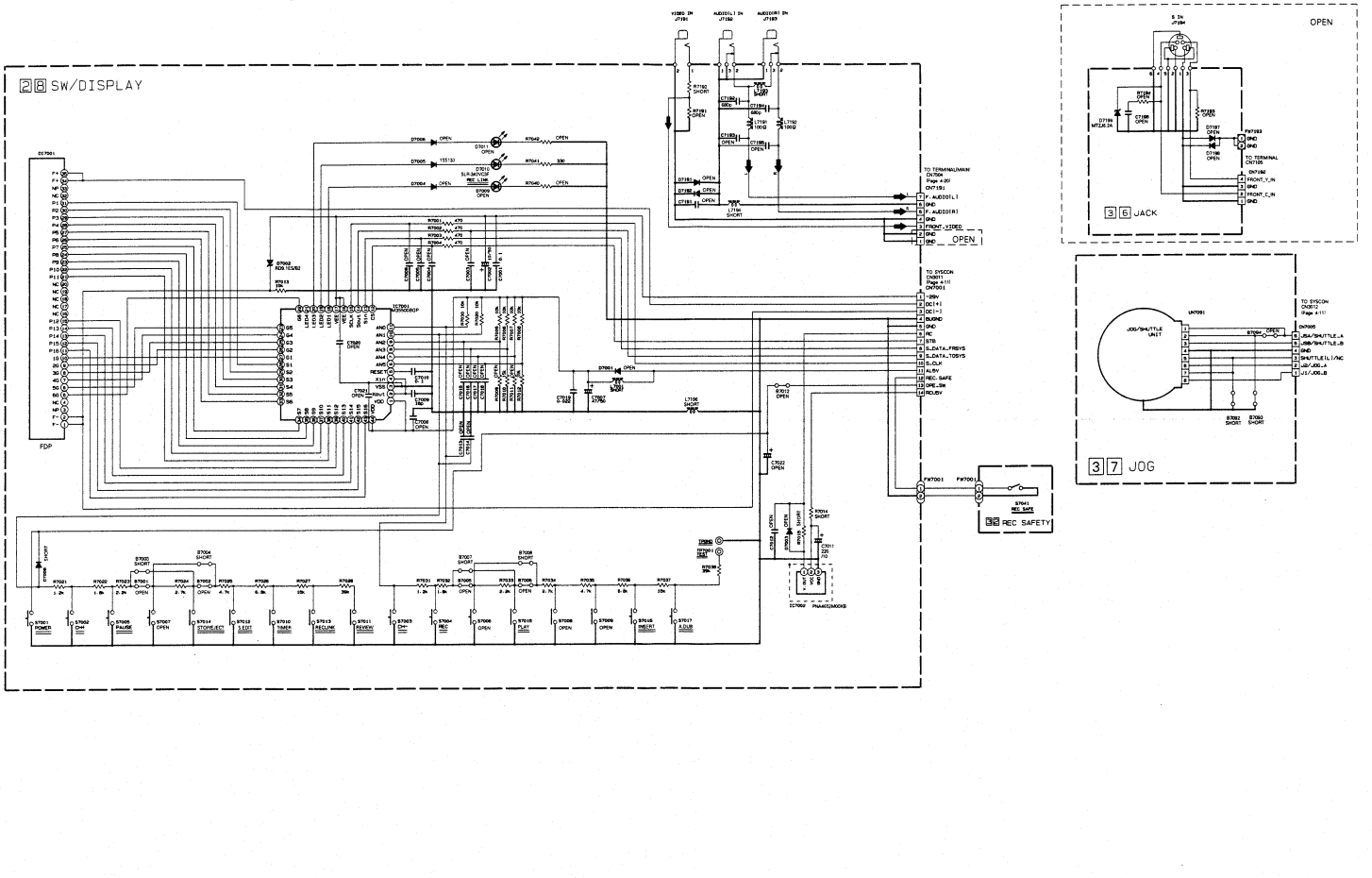
COMPONENT PARTS LOCATION GUIDE <DEMODULATOR> [HR-DD868EU]

REF.NO.	LOCATION
CAPACITOR	
C6701	B C 4B
C6702	B C 4B
C6703	A D 5A
C6704	A D 5C
C6705	B C 1C
C6706	B C 1D
C6707	B C 1D
C6708	B C 4D
C6709	A D 1A
C6710	B C 2A
C6711	B C 3A
C6712	A D 2B
C6713	A D 1B
C6714	B C 3C
C6715	A D 4B
C6716	B C 3B
C6717	B C 3C
C6718	A D 3D
C6719	A D 2D
C6720	A D 4C
C6721	B C 3C
C6722	A D 4D
C6723	B C 4C
C6724	A D 1B
C6725	A D 4D
C6726	B C 4C
C6727	B C 4C
C6728	B C 5C
C6729	B C 5D
C6730	B C 5D
CONNECTOR	
CN6701	A D 3A

REF.NO.	LOCATION
DIODE	
D6701	A D 5B
D6702	A D 5A
D6703	A D 2A
D6704	A D 3B
IC	
IC6701	A D 5B
COIL	
L6701	A D 3D
L6702	A D 2D
L6703	A D 4A
L6704	A D 3D
L6705	A D 4D

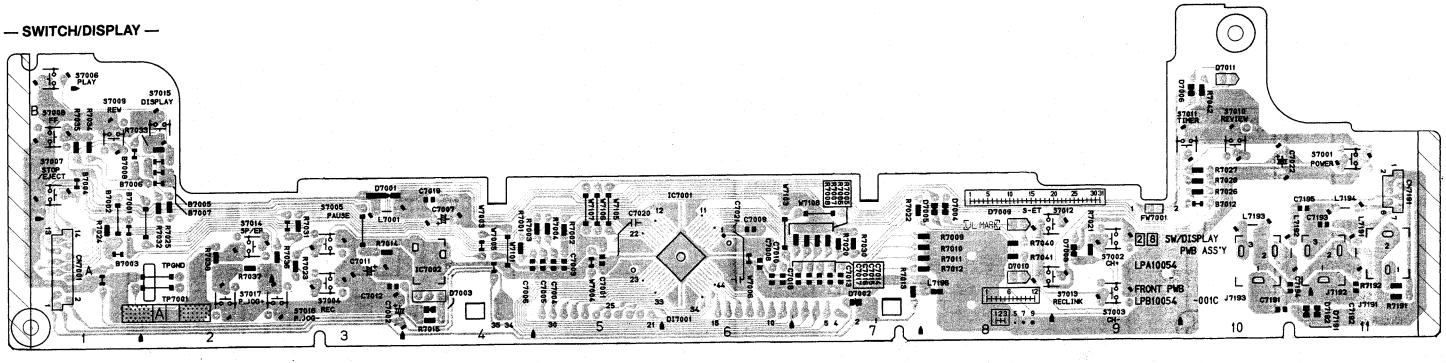
REF.NO.	LOCATION
TRANSISTOR	
Q6701	A D 5B
Q6702	A D 2D
Q6703	B C 2D
Q6704	B C 2A
Q6705	B C 2B
RESISTOR	
R6701	B C 4B
R6702	B C 4B
R6703	B C 5A
R6704	B C 5A
R6705	B C 2C
R6706	B C 1C
R6707	B C 1D
R6708	B C 2D
R6709	B C 1D

REF.NO.	LOCATION
R6710	B C 1D
R6711	B C 3D
R6712	B C 2A
R6713	B C 2A
R6714	B C 2B
R6715	B C 2A
R6716	B C 2B
R6717	B C 3A
R6718	B C 3B
R6719	B C 2C
R6720	B C 2C
OTHER	
LC6701	A D 3B
LC6702	A D 3A


28 SW/DISPLAY
FDP
TO TERMINAL/MAIN
CN704
CN7191
TO SYSCON
CN3011
CN7001
OPEN
36 JACK
37 JOG
38 REC SAFETY
JOG/SHUTTLE UNIT
TO SYSCON
CN3011
CN7001

4.19 SWITCH/DISPLAY, REC SAFETY AND JOG CIRCUIT BOARDS

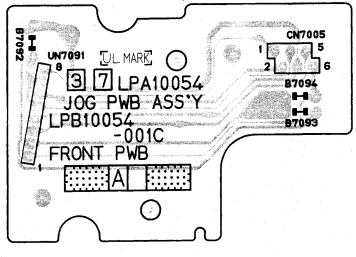
— SWITCH/DISPLAY —



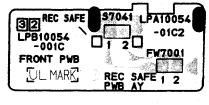
COMPONENT PARTS LOCATION GUIDE <SW/DISPLAY>

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		C7021	A D 6A	D7011	A D 10B	R7003	A D 5A	R7027	A D 10B	S7004	A D 3A
C7001	A D 5A	C7022	A D 10B	D7191	A D 10A	R7004	A D 5A	R7028	A D 10B	S7005	A D 3A
C7002	A D 3A	C7191	A D 10A	D7192	A D 11A	R7005	A D 7A	R7030	A D 7A	S7006	A D 1C
C7003	A D 5A	C7192	A D 11A	**IC**		R7006	A D 7A	R7031	A D 3B	S7007	A D 1B
C7004	A D 5A	C7193	A D 11A	IC7001	B C 6A	R7007	A D 7A	R7032	A D 2A	S7008	A D 1B
C7005	A D 5A	C7194	A D 10A	IC7002	A D 4A	R7008	A D 7A	R7033	A D 2B	S7009	A D 1B
C7006	A D 4A	C7195	A D 11A	**JACK**		R7009	A D 7A	R7034	A D 1B	S7010	A D 10B
C7007	A D 4A	**CONECTOR**		J7191	A D 11A	R7010	A D 7A	R7035	A D 1B	S7011	A D 10B
C7008	A D 6A	CN7001	A D 1A	J7192	A D 11A	R7011	A D 7A	R7036	A D 3A	S7012	A D 8A
C7009	A D 6A	CN7191	A D 11B	J7193	A D 10A	R7012	A D 7A	R7037	A D 2A	S7013	A D 8A
C7010	A D 6A	**DIODE**		**COIL**		R7013	A D 7A	R7038	A D 2A	S7014	A D 2A
C7011	A D 3A	D7001	A D 3B	L7001	A D 9C	R7014	A D 3A	R7040	A D 8A	S7015	A D 2B
C7012	A D 3A	D7002	A D 7A	L7191	A D 11A	R7015	A D 4A	R7041	A D 8A	S7016	A D 3A
C7013	A D 7A	D7003	A D 4A	L7192	A D 10A	R7020	A D 7A	R7042	A D 10B	S7017	A D 2A
C7014	A D 7A	D7004	A D 8B	L7193	A D 10A	R7021	A D 9A	R7191	A D 11A	**OTHER**	
C7015	A D 7A	D7005	A D 8B	L7194	A D 11A	R7022	A D 7A	R7192	A D 11A	DI7001	A D 6A
C7016	A D 7A	D7006	A D 10B	L7196	A D 8A	R7023	A D 3A	**SWITCH**		FW7001	A D 9B
C7017	A D 7A	D7008	A D 9A	**RESISTOR**		R7024	A D 1A	S7001	A D 11B	TP7001	A D 1A
C7018	A D 6A	D7009	A D 8A	R7001	A D 4A	R7025	A D 2A	S7002	A D 9A	TPGND	A D 1A
C7019	A D 4B	D7010	A D 8A	R7002	A D 5A	R7026	A D 10B	S7003	A D 9A		
C7020	A D 5A										

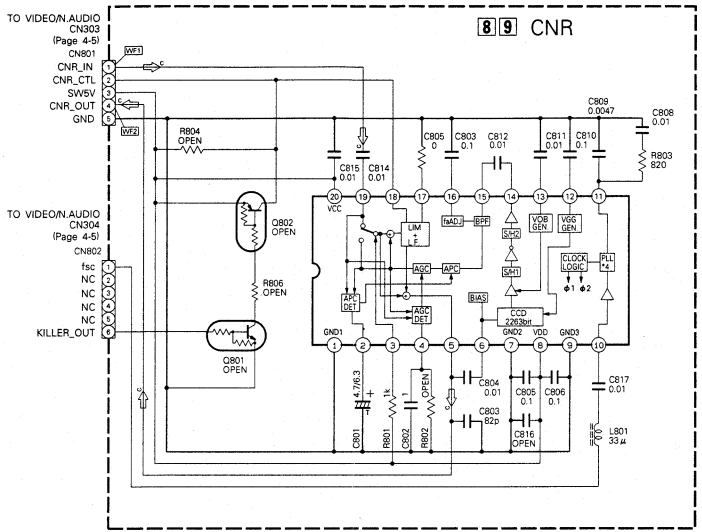
— JOG —



— REC SAFETY —

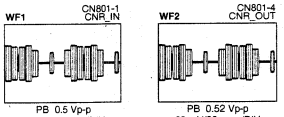


4.20 CNR SCHEMATIC DIAGRAM

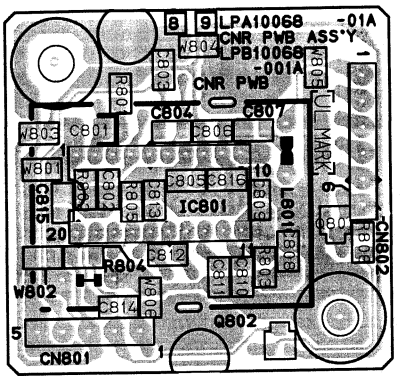


NOTE : For CNR waveforms, please refer to page 4-43.

WAVEFORMS

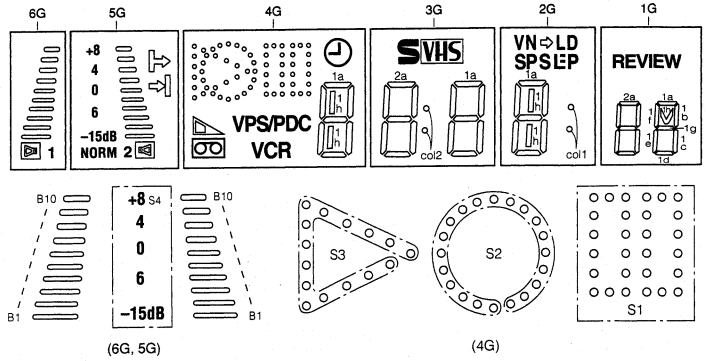


4.21 CNR CIRCUIT BOARD



4.22 FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT



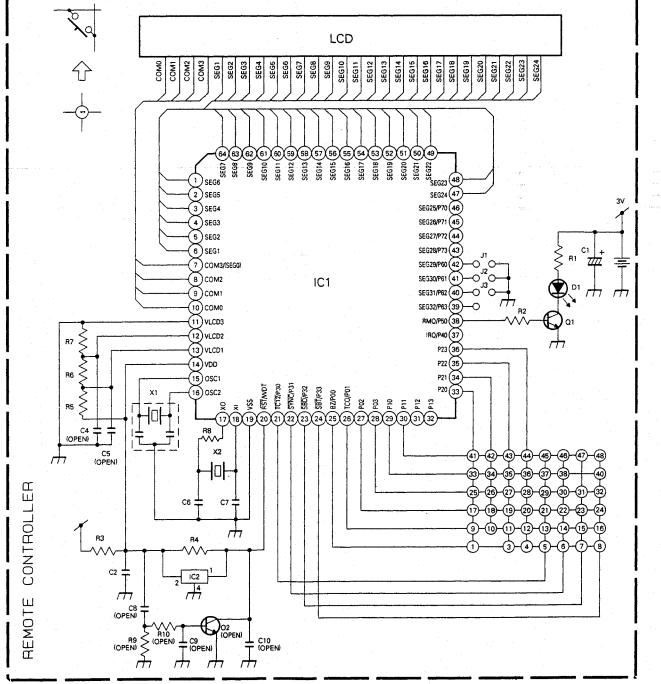
ANODE CONNECTION

	6G	5G	4G	3G	2G	1G
P 1	—	⇨	S2	1a	1a	1a
P 2	—	⇨	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	◷	1c	1c	1c
P 6	▷	◁	◺	1e	1e	1e
P 7	B10	B10	⊡	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	: (SEP)	2d
P16	B1	B1	1h	SVHS	LP (SEP)	REVIEW

4.23 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

KEY No.	KEY NAME
1	DATE−
2	FF
3	VOL−
4	START−
5	REW
6	PLAY
7	STOP−
8	SHARELY
9	CH/TRK−
10	TRANS
11	TIMER
12	CANCEL
13	TAPE
14	SHIFT
15	BDAILY
16	DATE+
17	MENU
18	VOL+
19	OK
20	PROG
21	START+
22	PROG CHECK
23	STOP+
24	0
25	3
26	CM/60 SEC
27	RE-VIEW
28	1
29	4
30	2
31	5
32	▼/V CH−
33	▲/V CH+
34	>>/VOL+
35	PAUSE
36	REC
37	<</VOL−
38	STOP
39	CABLESAT
40	DISPLAYENTER
41	POWER
42	TV/VCR
43	VCR/PROG Code/
44	VCR
45	AUDIO/MUTE
46	TV
47	REC START
48	REC PAUSE
37+7	
37+16	



4.24 VOLTAGE CHARTS

<VIDEO/N.AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	2.5	2.5
2	2.5	2.5
3	0	0
4	2.5	2.5
5	0	0
6	2.8	2.8
7	2.5	2.5
8	2.5	2.5
9	2.5	2.5
10	2.5	2.5
11	2.5	2.5
12	5.0	5.0
13	1.9	1.4
14	1.9	1.4
15	2.6	3.0
16	1.5	0.7
17	1.8	1.8
18	2.3	2.3
19	3.1	3.1
20	2.7	2.7
21	2.3	2.3
22	1.9	1.9
23	3.0	3.0
24	2.2	2.2
25	1.4	1.4
26	2.1	2.1
27	0	0
28	4.9	4.9
29	1.6	1.9
30	3.0	3.0
31	2.8	2.8
32	0	0
33	0	0
34	0	0
35	3.0	3.0
36	5.0	5.0
37	0	0
38	5.0	5.0
39	3.3	3.3
40	5.0	5.0
41	5.0	5.0
42	1.9	1.9
43	5.0	5.0
44	2.5	2.5
45	0	0
46	2.0	2.0
47	0	0
48	0	0
49	0	0
50	0.4	0.4
51	0	0
52	1.3	2.4
53	3.0	2.8
54	1.9	1.9
55	2.1	2.1
56	2.8	2.3
57	0	0
58	3.0	3.0
59	3.3	3.3
60	2.1	2.1
61	4.9	4.9
62	4.9	4.9
63	4.9	4.9
64	0	0
65	0.9	2.6

MODE PIN NO.	REC	PLAY
66	4.9	4.9
67	4.9	4.9
68	0	0
69	2.8	2.8
70	2.7	2.7
71	2.1	2.1
72	2.3	2.1
73	-	-
74	2.7	1.1
75	-	-
76	2.3	2.3
77	4.5	4.5
78	2.7	2.7
79	4.3	2.1
80	0	0
81	-	-
82	1.2	1.2
83	2.3	2.3
84	0	1.3
85	0	0
86	2.3	2.3
87	2.2	2.2
88	2.3	2.3
89	2.3	2.3
90	4.9	4.9
91	0	0
92	0	0
93	0	0
94	0	0
95	0.5	0.5
96	5.0	5.0
97	0.3	0
98	5.0	5.0
99	0.5	2.5
100	2.5	2.5
Q1		
E	3.4	3.4
C	0	0
B	2.7	2.7
Q2		
E	0	-
C	2.1	-
B	0	-
Q6		
E	2.7	2.7
C	0	0
B	2.1	2.1
Q34		
E	2.2	2.2
C	2.3	2.3
B	0	0
Q35		
E	2.3	2.3
C	2.2	2.2
B	0	0
Q36		
E	0	0
C	0	0
B	0.7	0.7
Q37		
E	0	0
C	0	0
B	0.7	0.7
Q38	*	
E	1.7	1.7
C	5.0	5.0

MODE PIN NO.	REC	PLAY
B	2.4	2.4
Q39		
E	2.4	2.4
C	0	0
B	1.7	1.7
Q49		
E	2.1	2.1
C	4.9	4.9
B	2.8	2.8
Q152		
E	5.0	2.7
C	0	0
B	4.5	2.1
Q153		
E	2.1	2.1
C	4.9	4.9
B	2.7	2.7
Q2001		
E	-19.0	0
C	0	0
B	-25.3	0.7
Q2002		
E	-19.0	0
C	0	0
B	-24.9	0.7
Q2003		
E	5.0	5.0
C	-25.1	4.9
B	5.0	0
Q2051		
E	0	0
C	8.1	0.2
B	0	0.2
Q2052		
E	11.5	11.5
C	11.3	1.1
B	10.7	11.5
Q2053		
E	0	0
C	0	11.4
B	4.5	0
Q2054		
E	11.3	1.1
C	11.2	0
B	10.5	1.1
Q2055		
E	0	0
C	0	1.1
B	5.0	0
Q2061		
E	0	0
C	7.9	0.2
B	0	0.2
Q2062		
E	11.2	0
C	11.1	0.2
B	10.4	0
Q2063		
E	0	0
C	0	0
B	5.0	0
Q2102		
E	0	-
C	0	-
B	4.9	-
CN1		

MODE PIN NO.	REC	PLAY
1	0	-
2	0	-
3	0	-
4	0	-
5	2.3	-
6	2.3	-
7	2.4	-
8	2.4	-
9	2.5	-
10	2.5	0
11	2.5	0
CN303		
1	2.1	2.1
2	4.9	0
3	5.0	5.0
4	2.4	2.5
5	0	0
CN304		
1	3.4	3.4
2	0	0
3	0	5.1
4	0	0.6
5	0	0
6	0	0
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.2	2.5
7	2.5	2.5
CN2002		
1	0	0
2	0	0

<ON SCREEN>

MODE PIN NO.	REC	PLAY
IC201		
1	0	0
2	2.7	2.7
3	5.0	5.0
4	0	0
5	4.7	4.7
6	2.5	2.5
7	2.5	2.5
8	5.0	5.0
9	3.0	3.0
10	4.5	4.5
11	1.2	1.2
12	5.0	5.0
13	2.9	2.9
14	2.9	2.9
15	0	0
16	1.2	1.2
17	0	0
18	5.0	5.0
19	2.3	2.3
20	0	0
21	2.3	2.3
22	0.5	0.5

MODE PIN NO.	REC	PLAY
23	5.0	5.0
24	2.9	2.9
25	2.5	2.5
26	5.0	5.0
27	4.7	4.7
28	3.7	3.7
29	5.0	5.0
30	5.0	5.0
Q207		
E	3.0	3.0
C	0	0
B	2.3	2.3
Q208		
E	2.3	2.3
C	5.0	5.0
B	3.0	3.0

<FMA>

MODE PIN NO.	REC	PLAY
IC2201		
1	2.4	2.4
2	0	0
3	2.4	2.4
4	0	0
5	0	0
6	2.5	2.5
7	2.0	2.0
8	0	0
9	0	0
10	0	0
11	0	0
12	2.0	2.0
13	0	0
14	0	0
15	0	0
16	2.5	2.5
17	0.6	0.3
18	2.5	2.5
19	2.5	2.5
20	2.5	0.1
21	2.5	0
22	2.6	0.6
23	0	0
24	2.5	0.7
25	4.9	4.9
26	2.6	0
27	0	-
28	4.2	0
29	4.4	1.8
30	4.4	1.7
31	1.0	3.0
32	2.5	2.5
33	2.5	2.5
34	0.7	0.3
35	2.5	2.5
36	0	0.2
37	1.7	1.7
38	0	0
39	0	0
40	5.0	5.0
41	0	0

MODE PIN NO.	REC	PLAY
42	5.0	5.0
43	4.9	4.9
44	3.2	3.2
45	0	0
46	4.8	4.8
47	2.5	2.5
48	2.5	2.5
49	3.4	2.8
50	1.3	2.9
51	0	0
52	0	0
53	4.4	4.4
54	0	0
55	0	0
56	0	0
57	4.4	4.4
58	10.0	10.0
59	4.5	4.5
60	0	0.8
61	2.5	2.5
62	2.4	2.4
63	4.4	4.4
64	4.5	4.5
Q2151		
E	4.9	4.9
C	5.0	5.0
B	2.1	2.1
Q2201		
E	0	0
C	0	0
B	0	0
Q2202		
E	0	0
C	0	0
B	0	0
Q2203		
E	5.2	5.2
C	0	0
B	5.1	5.1
Q2204		
E	0	0
C	5.1	5.1
B	0	0.2
Q2253		
E	0	0
C	0	0
B	4.6	4.6
Q2258		
E	4.5	0
C	4.4	1.7
B	0.2	5.0

<SYSTEM CONTROL>

MODE PIN NO.	REC	PLAY
IC3001		
1	2.8	2.5
2	0	0
3	1.9	2.5
4	2.5	2.5
5	2.5	2.5
6	2.6	2.6

MODE PIN NO.	REC	PLAY
7	2.5	2.5
8	2.5	2.5
9	5.1	5.1
10	5.1	5.1
11	0	0
12	0	0.2
13	0	1.1
14	4.6	4.6
15	5.1	5.1
16	1.3	2.9
17	0	0.7
18	0	0
19	3.4	2.8
20	0.2	0.2
21	4.1	4.1
22	4.2	0
23	0	0
24	5.0	5.0
25	0	0
26	5.1	5.1
27	5.1	5.1
28	5.1	5.1
29	5.1	5.1
30	0	0
31	5.1	5.1
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	5.0	5.0
38	1.8	1.8
39	4.5	4.5
40	0	0
41	5.1	5.1
42	4.6	4.6
43	0	0
44	0	0
45	5.1	5.1
46	5.1	0
47	0	0
48	5.1	0
49	4.9	4.9
50	4.9	4.9
51	5.1	5.1
52	1.0	1.0
53	4.5	4.5
54	-	-
55	-	-
56	0	0
57	0	0
58	5.0	5.0
59	3.0	3.0
60	0	0
61	0	0
62	0	0
63	0	0
64	-	-
65	-	-
66	5.1	5.1
67	-	-
68	0	0
69	-	-
70	5.1	5.1
71	5.1	5.1
72	5.0	5.0

MODE PIN NO.	REC	PLAY
73	5.1	5.1
74	0	0
75	4.7	4.7
76	4.7	4.7
77	3.1	3.1
78	5.1	0
79	0	5.1
80	0	0
81	0	0
82	5.1	5.1
83	-	-
84	0	0
85	0	0
86	4.7	4.7
87	5.1	5.1
88	4.8	0
89	0	0
90	0	0
91	3.0	3.0
92	5.0	5.0
93	5.1	5.1
94	5.1	5.1
95	5.1	5.1
96	0	0
97	5.1	5.1
98	0.2	0.2
99	0	-
100	-	-
101	2.5	2.5
102	1.2	1.2
103	0	0
104	0	0
105	5.1	5.1
106	5.0	5.0
107	0	0
108	1.6	1.6
109	5.1	5.1
110	0	0
111	0	0
112	2.5	2.5
IC3002		
1	5.1	5.1
2	5.0	5.0
3	0	0
IC3003		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.7	4.7
6	4.7	4.7
7	0	0
8	5.1	5.1
IC3004		
1	0	0
2	12.2	12.2
3	-	0
4	0	0
5	0	0
6	12.2	12.2
7	0	0.3
8	12.2	12.2
9	0	0
IC3301		
1	5.0	-
2	5.0	-

MODE PIN NO.	REC	PLAY
3	0	-
4	0	5.0
5	3.0	-
6	3.0	-
7	5.0	-
8	5.0	0
9	0	-
10	0	-
11	5.0	-
12	5.0	-
13	4.7	-
14	4.7	-
15	0	-
16	0	-
17	5.0	-
18	5.0	-
19	2.2	-
20	2.3	-
21	0	-
22	0	-
23	0	-
24	0	-
25	5.0	-
26	0	-
27	0	-
28	0	-
29	0	-
30	0	-
31	5.0	0
32	5.0	0
33	0	-
34	0	-
35	0	-
36	0	-
37	0	-
38	0	-
39	0	-
40	0	-
41	0.5	0.7
42	2.2	-
IC3501		
1	0	-
2	12.3	-
3	3.0	0.3
4	0.8	-
5	0	-
6	12.3	-
7	3.0	0.3
8	3.5	-
9	0	-
Q3001		
E	0	0
C	12.2	12.2
B	0	0
Q3002		
E	0	0
C	4.8	4.7
Q3003		
E	0	0
C	5.0	5.0
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q3005		
E	5.1	5.1

MODE PIN NO.	REC	PLAY
C	5.8	5.8
B	5.7	5.7
Q3008		
E	0	0
C	4.9	4.9
B	0	0
Q3501		
E	3.4	-
C	3.5	-
B	4.1	-
Q4001		
E	0	0
C	0	0
B	5.0	5.0
CN3001		
1	11.5	11.5
2	0	0
3	1.3	1.3
4	0	0
5	1.6	1.6
CN3002		
1	0	0.4
2	0	0.4
CN3003		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	5.1	5.1
7	0	0
8	11.5	11.5
CN3004		
1	5.1	5.1
2	5.1	5.1
3	0	0
4	0	0
CN3011		
1	5.1	5.1
2	0	0
3	5.1	5.1
4	5.1	5.1
5	4.5	4.5
6	5.1	5.1
7	1.1	1.1
8	4.3	4.5
9	5.1	5.1
10	0	0
11	0	0
12	-19.5	-19.5
13	-15.7	-15.7
14	-28.4	-28.4
CN3012		
1	0.5	0.5
2	0.5	0.5
3	0	0
4	0	0
5	0	0
6	0	0
CN3501		
1	0	-
2	0	-
3	0	-
4	5.0	-
5	0.5	-
6	0.4	-

<SW. REG>

MODE PIN NO.	REC	PLAY
IC5301		
1	5.8	5.8
2	5.0	5.0
3	4.9	4.9
4	0	0
5	12.2	12.2
6	11.5	11.5
7	12.2	12.2
8	1.2	1.2
9	1.2	1.2
10	10.8	10.8
Q5101		
S	0	0
D	160.7	157.0
G	-	-
Q5102		
E	0	0
C	-	-
B	-	-
Q5301		
E	21.0	21.0
C	11.5	11.5
B	21.0	21.0
Q5302		
E	0	0
C	20.9	21.1
B	0	0
Q5303		
E	5.2	5.2
C	5.8	5.8
B	5.8	5.8
Q5304		
E	11.5	11.5
C	12.3	12.3
B	12.2	12.2
Q5305		
E	12.2	12.2
C	12.2	12.2
B	0.6	0.6
Q5306		
E	12.2	12.2
C	11.5	11.5
B	10.9	10.9
Q5310		
E	0	0
C	0	0
B	4.6	4.6
Q5311		
E	32.1	32.1
C	32.1	32.1
B	31.5	31.5
Q5312		
E	-15.4	-15.4
C	-15.6	-15.6
B	-16.1	-16.1

<TUNER>

MODE PIN NO.	REC	PLAY
IC6080		
1	1.2	1.2
2	1.7	1.7
3	2.9	2.9
4	0	0
5	4.1	4.1
6	4.1	4.1
7	4.1	4.1
8	11.5	11.5
Q6030		
E	0.7	0.7
C	0	0
B	0	0
Q6031		
E	0	0
C	0	0
B	5.0	5.0
Q6032		
E	0	0
C	0	0
B	4.3	4.3
[HR-DD865EK]		
CN6701		
1	0	0
2	4.7	4.7
3	4.7	4.7
4	4.7	4.7
5	0	0
6	0	0
7	4.9	4.9
8	0	0
9	0	0
10	0	0
[HR-DD868EU]		
CN6701		
1	-	-
2	-	-
3	-	-
4	0	0
5	-	-
6	-	-
7	-	-
8	0	0
9	-	-
10	-	-
11	-	-
12	-	-

<C.BOX CTL>

MODE PIN NO.	REC	PLAY
IC3961		
1	0	0
2	5.1	5.1
3	5.2	5.2
4	0	0
5	5.1	5.1
6	5.2	5.2
7	0	0
8	5.1	5.1
IC3962		
1	0	0

MODE PIN NO.	REC	PLAY
2	5.1	5.1
3	5.2	5.2
4	0	0
5	5.1	5.1
6	5.2	5.2
7	0	0
8	5.1	5.1

<TERMINAL(MAIN)>

MODE PIN NO.	REC	PLAY
CN7501		
1	0.2	5.0
2	0	0
3	0	0
4	2.3	2.3
5	0	0
6	1.2	1.2
7	11.5	11.5
8	0.7	0.7
9	11.5	11.5
CN7502		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	4.8	4.8
8	4.7	4.7
9	5.1	5.1
10	5.1	5.1
CN7503		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
CN7504		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0

<VSC>

MODE PIN NO.	REC	PLAY
IC2501		
1	0	-
2	0	-
3	0	-
4	0	-
5	0	-
6	0	-

MODE PIN NO.	REC	PLAY
7	0	-
8	0	-
9	0	-
10	4.5	2.1
11	5.0	2.6
12	0	-
13	0	-
14	0	-
15	0	-
16	0	-
17	0	-
18	5.0	-
19	0	1.6
20	5.0	-
21	0	-
22	0	-
23	0	-
24	5.0	-
25	5.0	-
26	5.0	-
27	5.0	-
28	5.0	-
29	5.0	-
30	5.0	-
31	5.0	-
32	0	-
33	2.2	-
34	0.4	0.6
35	0	-
36	0	-
37	5.0	-
38	0	-
39	0	-
40	0	-
41	0	-
42	0	-
43	2.5	-
44	0	-
45	2.5	-
46	2.5	-
47	2.5	-
48	2.5	-
49	2.5	-
50	2.5	-
51	2.5	-
52	2.5	-
53	5.0	-
54	0	0.5
55	1.0	0
56	0	-
57	0	-
58	5.0	-
59	5.0	-
60	5.0	0
61	5.0	-
62	0	-
63	0	-
64	0	-
Q2501		
E	0	-
C	0	-
B	0	0.5
Q2502		
E	0	-
C	0	0.4
B	5.0	0

<TERMINAL>

MODE PIN NO.	REC	PLAY
IC7101		
1	1.6	1.6
2	0	0
3	1.6	1.6
4	11.5	11.5
5	2.0	2.0
6	0	0
7	5.1	5.1
8	11.5	11.5
9	5.1	5.1
10	5.2	5.2
11	5.1	5.1
12	0	0
13	4.8	4.8
14	4.8	4.8
15	5.8	5.8
16	5.1	5.1
17	5.8	5.8
18	5.1	5.1
19	11.5	11.5
20	2.5	2.5
21	1.4	1.1
22	1.4	1.1
23	2.5	2.5
24	2.0	2.0
Q7104		
E	3.0	3.0
C	0	0
B	2.3	2.3
CN7101		
1	0.2	5.0
2	0	0
3	0	0
4	2.3	2.3
5	0	0
6	1.2	1.2
7	11.5	11.5
8	0.7	0.7
9	11.5	11.5
CN7102		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	4.8	4.8
8	4.7	4.7
9	5.1	5.1
10	5.1	5.1
CN7103		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0

<DEMODULATOR>
[HR-DD865EK]

MODE PIN NO.	REC	PLAY
IC6701		
1	2.4	2.4
2	2.4	2.4
3	4.9	4.9
4	0	0
5	0	0
6	4.8	4.8
7	0	0
8	4.8	4.8
9	0	0
10	4.7	4.7
11	0	0
12	4.8	4.8
13	0	0
14	0	0
15	3.4	3.4
16	2.4	2.4
17	0	0
18	2.2	2.2
19	0	0
20	0	0
21	4.6	4.6
22	0	0
23	2.2	2.2
24	2.2	2.2
25	2.2	2.2
26	4.8	4.8
27	0	0
28	4.8	4.8
29	4.7	4.7
30	4.8	4.8
31	0	0
32	4.7	4.7
33	4.7	4.7
34	0	0
35	4.7	4.7
36	0	0
37	4.7	4.7
38	2.4	2.4
39	2.4	2.4
40	2.4	2.4
41	2.4	2.4
42	4.7	4.7
43	4.9	4.9
44	0	0
Q6701		
E	1.9	1.9
C	4.9	4.9
B	2.6	2.6
CN6701		
1	0	0
2	4.7	4.7
3	4.7	4.7
4	4.7	4.7
5	0	0
6	0	0
7	4.9	4.9
8	0	0
9	0	0
10	0	0

<DEMODULATOR>
[HR-DD868EU]

MODE PIN NO.	REC	PLAY
IC6701		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	0	0
24	-	-
25	-	-
26	0	0
27	-	-
28	-	-
29	0	0
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	-	-
44	-	-
45	0	0
46	-	-
47	-	-
48	-	-
49	-	-
50	0	0
51	-	-
52	-	-
Q6701		
E	-	-
C	-	-
B	-	-
Q6702		
E	-	-
C	-	-
B	-	-
Q6704		
E	0	0
C	-	-
B	-	-
Q6705		

MODE PIN NO.	REC	PLAY
E	0	0
C	-	-
B	-	-
CN6701		
1	-	-
2	-	-
3	0	0
4	-	-
5	-	-
6	-	-
7	0	0
8	-	-
9	-	-
10	-	-
11	-	-

<SWITCH/DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	4.9	4.9
2	2.2	2.2
3	0	0
4	2.2	2.2
5	4.9	4.9
6	4.9	4.9
7	4.9	4.9
8	4.9	4.9
9	4.9	4.9
10	4.9	4.9
11	4.9	4.9
12	4.7	4.7
13	0.8	0.8
14	4.9	5.0
15	4.5	4.5
16	-28.0	-27.9
17	-28.0	-27.9
18	-27.8	-27.6
19	-27.8	-27.7
20	4.7	4.6
21	-23.7	-23.5
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-

MODE PIN NO.	REC	PLAY
42	-	-
43	-	-
44	4.9	4.9
IC7002		
1	5.1	5.1
2	5.1	5.1
3	0	0
CN7001		
1	-28.3	-28.1
2	-15.4	-15.2
3	-19.4	-19.1
4	0	0
5	0	0
6	5.1	5.1
7	4.7	4.7
8	0.8	0.8
9	5.0	5.0
10	4.5	4.5
11	5.0	5.0
12	5.0	5.0
13	0	0
14	5.1	5.1
CN7191		
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
FW7001		
1	4.9	4.9
2	0	0

<JOG>

MODE PIN NO.	REC	PLAY
CN7005		
1	0	0
2	0	0
3	0	0
4	0	0
5	0.5	0.5
6	0.5	0.5

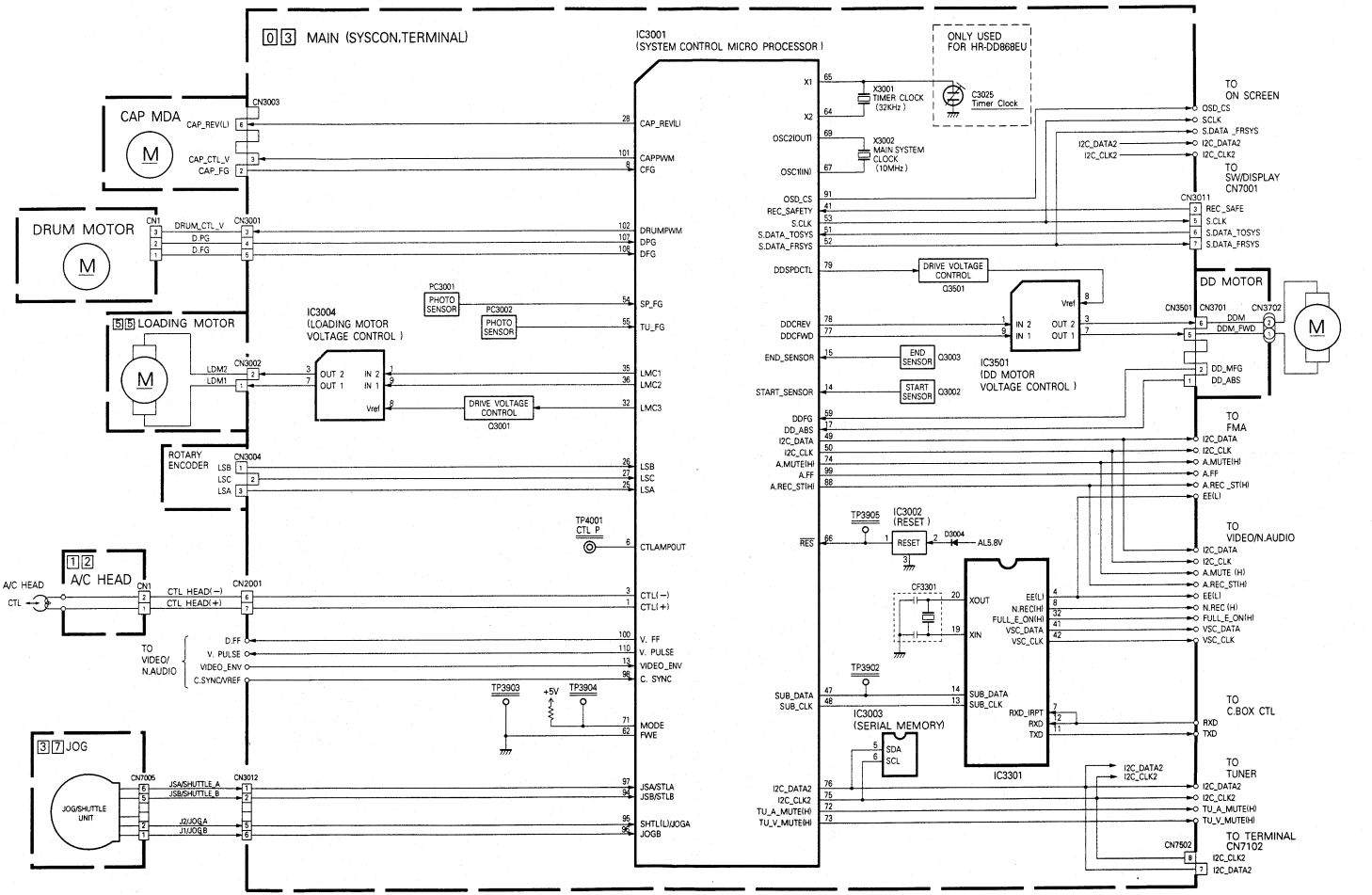
<REC SAFETY>

MODE PIN NO.	REC	PLAY
FW7001		
1	4.9	4.9
2	0	0

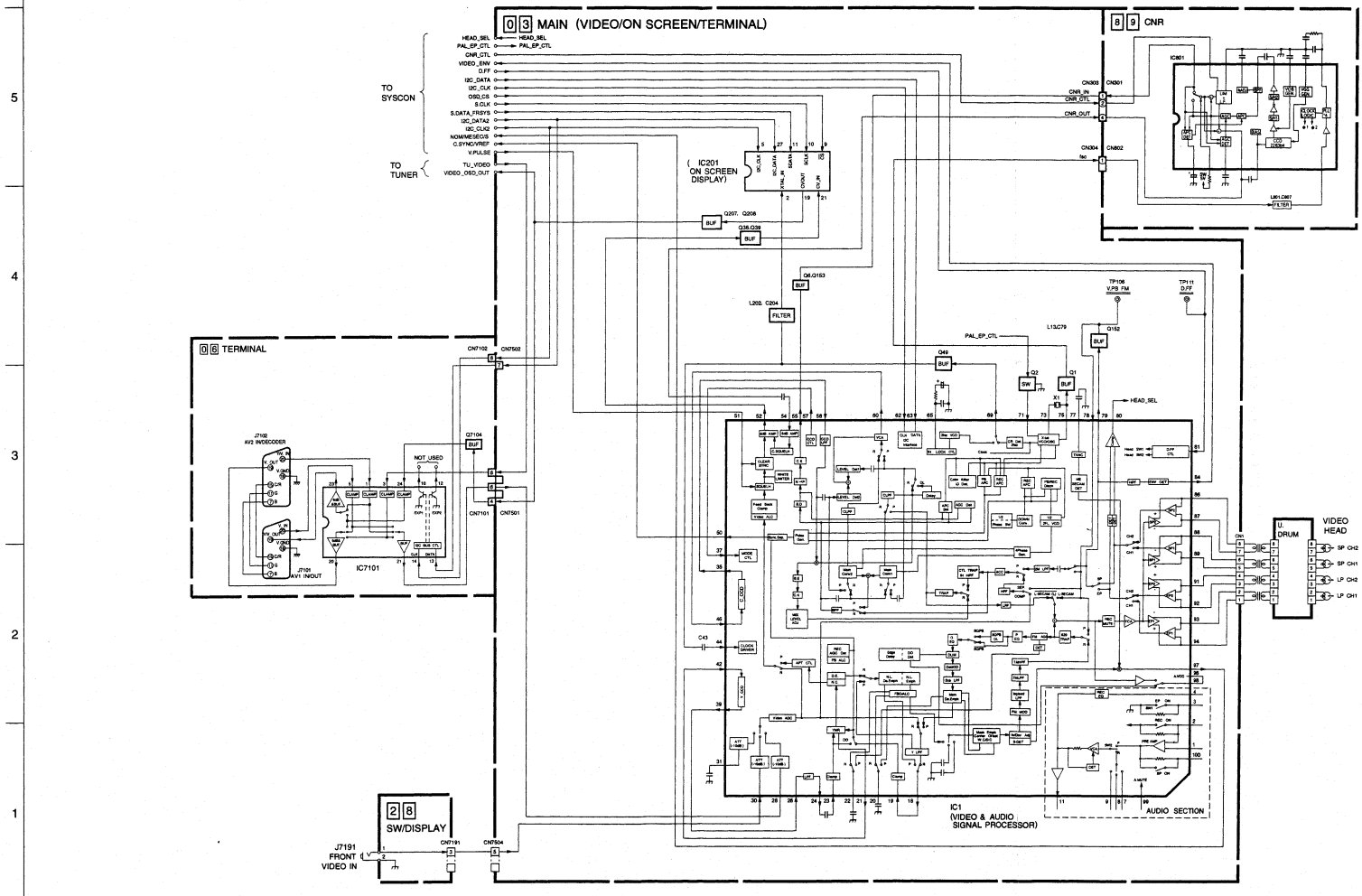
<CNR>

MODE PIN NO.	REC	PLAY
IC801		
1	0	0
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	0	0
8	5.0	5.0
9	0	0
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	0	0
18	4.9	0
19	-	-
20	5.0	5.0
CN801		
1	2.1	2.1
2	4.9	0
3	5.0	5.0
4	2.4	2.5
5	0	0
CN802		
1	3.4	3.4
2	0	0
3	0	5.1
4	0	0.6
5	0	0
6	0	0

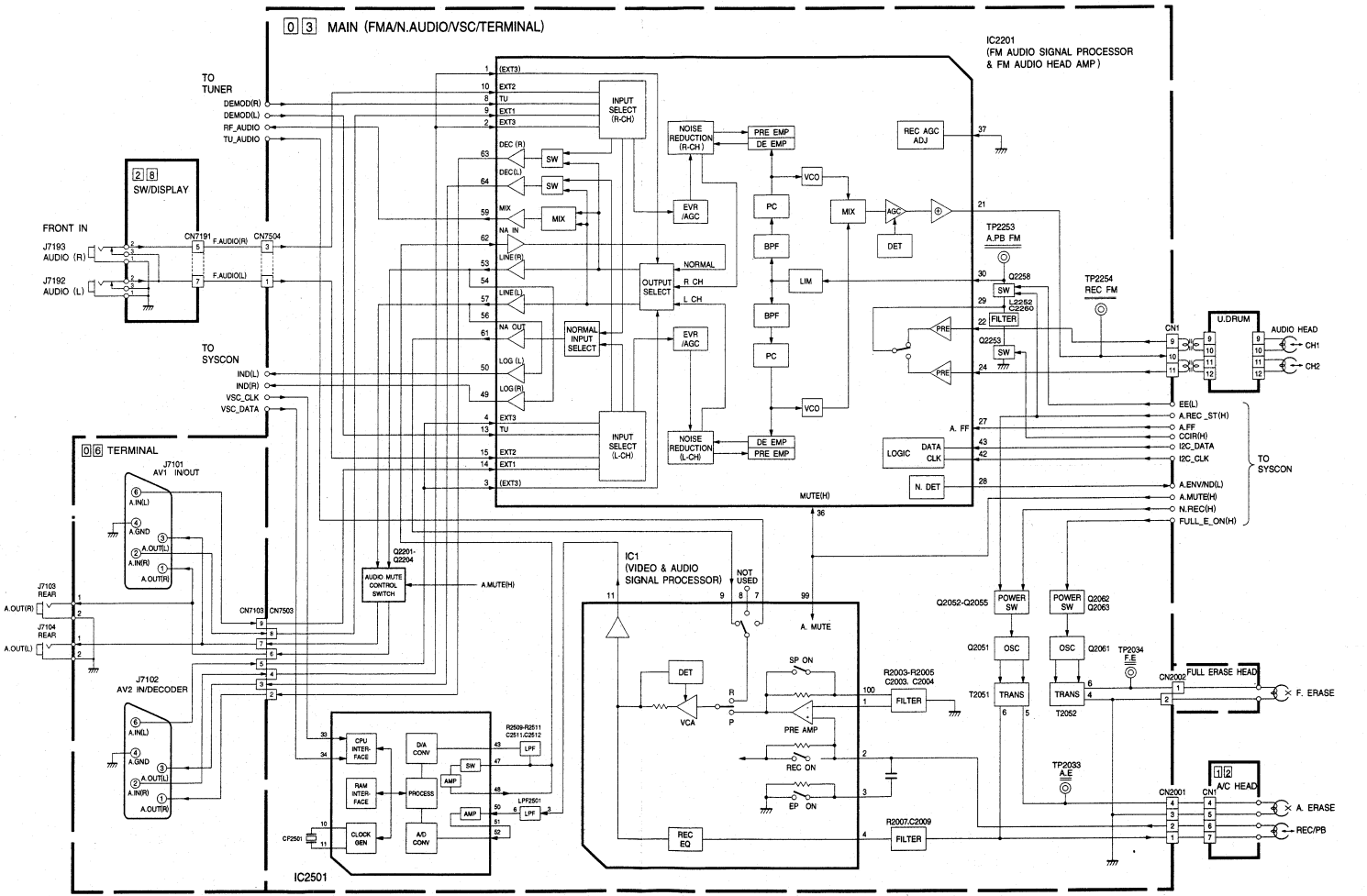
4.25 SYSTEM CONTROL BLOCK DIAGRAM



4.26 VIDEO BLOCK DIAGRAM



4.27 AUDIO BLOCK DIAGRAM



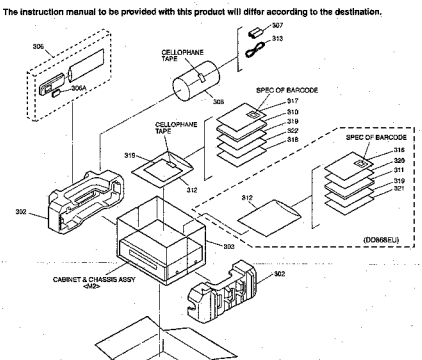
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.

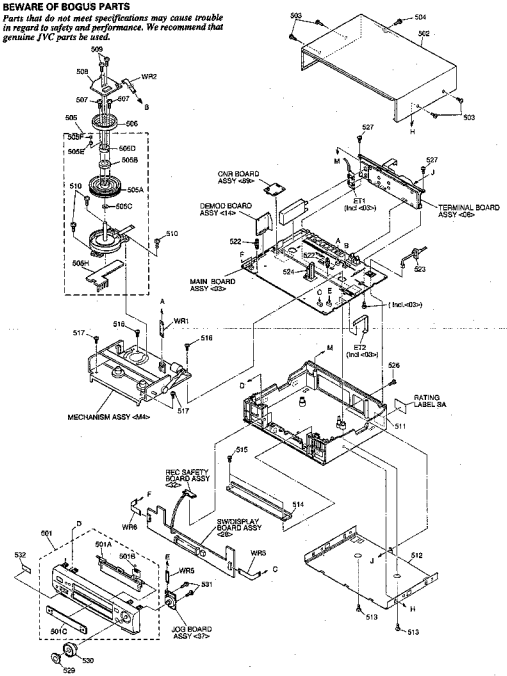


#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				
PACKING AND ACCESSORY ASSEMBLY <M1>				
		301	LP30615-005A	PACKING CASE,DD868EU
			LP30615-007B	PACKING CASE,DD868EX
		302	LP30606-002B	CUSHION ASSY
		303	PQM30221-9S	POLY BAG
		306	LP20667-002C	REMOTE CONTROLLER
		306A	LP40225-003A	CO√ER(BATTERY)
		307		BATTERY(X2(*R6* TYPE)
		309	QPO2302302P	POLY BAG
	⚠	310	LPT0247-001A	INST.BOOK(EN),DD868EK
	⚠		LPT0250-006A	INST.BOOK(IT),DD868EU
	⚠		LPT0250-007A	INST.BOOK(DA),DD868EU
	⚠		LPT0250-008A	INST.BOOK(FI),DD868EU
	⚠		LPT0250-009A	INST.BOOK(SW),DD868EU
	⚠		LPT0250-010A	INST.BOOK(NO),DD868EU
	⚠		LPT0250-011A	INST.BOOK(PT),DD868EU

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	⚠		LPT0250-012A	INST.BOOK(GR),DD868EU
	⚠		LPT0250-013A	INST.BOOK(CZ),DD868EU
	⚠		LPT0250-014A	INST.BOOK(PO),DD868EU
	⚠		LPT0250-015A	INST.BOOK(HU),DD868EU
	⚠		LPT0250-016A	INST.BOOK(RU),DD868EU
	⚠	311	LPT0250-001A	INST.BOOK(EN),DD868EU
	⚠		LPT0250-002A	INST.BOOK(GE),DD868EU
	⚠		LPT0250-003A	INST.BOOK(FR),DD868EU
	⚠		LPT0250-004A	INST.BOOK(DU),DD868EU
	⚠		LPT0250-005A	INST.BOOK(SP),DD868EU
		312	QPO0250303P	POLY BAG
		313	PEAC0300-02	RF CABLE
		316	BT-54013-1	WARRANTY CARD,DD868EU
		317	BT-54008-2	GUARANTY CARD,DD868EK
		318	LP00790-001A	QUESTIONAIRE CARD,DD868EK
		319	LP40025-001A	SHEET
		320	LPT0248-018A	SHEET(ATTENTION),DD868EK
		321	PQ45146-18Z	SHEET(SPAIN),DD868EU
		322	LPT0248-016A	SHEET(CAUTION),DD868EU

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



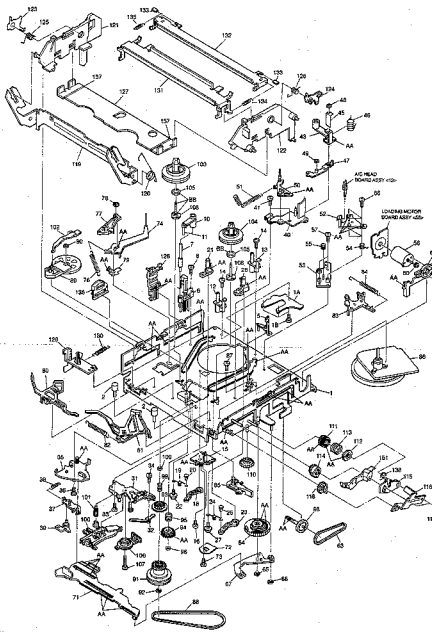
# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

⚠	501	LP10217-009C	FRONT PANEL ASSY,DD868EU
⚠		LP10217-010C	FRONT PANEL ASSY,DD865EK
	501A	LP20342-009A	CASSETTE DOOR
	501B	PQ46445	TORSION SPRING
	501C	LP30531-006B	DISPLAY WINDOW,DD868EU
		LP30531-007B	DISPLAY WINDOW,DD865EK
⚠	502	PQ11975-59	TOP COVER
	503	QYTDSP3010M	SCREW,X4TOP COVER(SIDE)
	504	QYTDSP3010M	SCREW,TOP COVER(REAR)
	505	LP20319-009A	DRUM SUB ASSY
	505A	LP20318-005A	UPPER DRUM ASSY
	505B	PDM4439	CAP
	505C	PDM4444-19-2	WASHER
	505D	LP40572-001A	COLLAR ASSY
	505E	LP40333-001A	CONTACT
	505F	LP30064-014A	COMPRESSION SPRING
	505H	LPA20902-01C	SENSOR BOARD ASSY
	506	PD20179-2-4	ROTOR ASSY
	507	QYSPSP5006Z	SCREW,X2
	508	PD20180-1-2	STATOR ASSY
	509	QYSPSPH2606Z	SCREW,X2
	510	QYTDST2610Z	SCREW,X3 DRUM
⚠	511	LP10016-003G	BOTTOM CHASSIS
⚠	512	PQ11668-2-11	BOTTOM COVER
	513	QYTDSP3010Z	SCREW,X2 BOTTOM COVER
	514	LP30012-001B	BRACKET(CHASSIS)
	515	QYTDSP3010Z	SCREW,X2 BRACKET(CHASSIS)
	516	QYTDSF4012Z	SCREW,X2 MECHA
	517	QYTDSF3010Z	SCREW,X2 MECHA
	522	LP40226-031A	PC SUPPORT,X2
⚠	523	QMP1A10-170	POWER CORD,DD868EU
⚠		QMP51K0-170	POWER CORD,DD865EK
	524	LP40253-021B	STOPPER
	526	QYTDSP3010M	SCREW,TERMINAL
	527	QYTPSPG3010Z	SCREW,X2 TERMINAL
	529	LP30121-008A	KNOB,JOG
	530	LP30120-008A	KNOB SHUTTLE
	531	QYTDSP3508Z	SCREW,X2 JOG
	532	LP30532-022A	CAP(JACK)
	WR1	QUC112-0714CG	FFC WIRE,A/C HEAD CN2001
	WR2	QUC212-0620CG	FFC WIRE,DRUM CN3001
	WR3	QUC212-1414CG	FFC WIRE,DISPLAY CN3911
	WR5	QUC112-0616CG	FFC WIRE,JOG CN3012
	WR6	QUC212-0618CG	FFC WIRE,JACK CN7504

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
1			LP00238-009G	MAIN DECK ASSY
1A			LP40275-003A	PLATE(SUPPLY)
1B			QYTDST26062	SCREW,X4
2			PQ45302-1-3	ADJUST PIN
5			LP30492-002B	SIDE POLE GUARD
6			NAH0001-001	FULL ERASE HEAD
7			LP40095-001B	GUIDE POLE(SUPPLY)
8			QYTDST26062	SCREW,FE HEAD
9			LP30459-002A	TENSION STUD BASE
11			LP40357-002A	TENSION STUD
12			LP40036-001B	UV CATCHER(SUPPLY)
13			LP40535-001A	UV CATCHER ASSY(TAKE UP)
14			QYTPST26062	SCREW,X2 UV CATCHER
15			LP30223-003C	LOADING ARM GEAR SHAFT
16			QYTDST26062	SCREW,X2
17			LP30224-001A	LOADING ARM GEAR(SUPPLY)
18			LP40099-001A	TORSION ARM
19			LP40100-001A	PIN
20			LP40101-002D	POLE BASE ASSY(SUPPLY)
21			QYSPST02606Z	SCREW
22			LP40103-002B	LOADING ARM GEAR(TAKE UP)
23			LP40099-001A	TORSION ARM(TAKE UP)
24			LP40100-001A	PIN
25			LP40104-002C	POLE BASE ASSY(TAKE UP)
26			QYSPST02606Z	SCREW
27			LP30233-003G	ROTARY ENCODER GUIDE
31			LP30469-001C	BRAKE LEVER
32			QYTPST26062	SCREW
33			QYTPST26062	SCREW
34			LP30226-004B	CONTROL PLATE GUIDE
35			QYTPST26062	SCREW
36			LP30236-003B	TAKE UP LEVER
37			LP30003-028A	TENSION SPRING
38			LP40119-002A	T.UP HEAD
39			LP00234-004B	LID GUIDE
40			QYTDST26062	SCREW,X2
41			LP40106-001B	PINCH ROLLER ARM ASSY
42			LP40478-001A	P.R.SHEET2
43			LP40148-002A	TORSION SPRING
44			LP40149-001B	P.LEVER ASSY
45			LP30016-002A	SLIT WASHER
46			LP40105-002E	GUIDE ARM ASSY
47			LP40194-001C	TENSION SPRING
48			QAH0010-004	AC HEAD
49			LP30228-001A	HEAD BASE
50			LP30004-013A	COMPRESSION SPRING,X3
51			LP40228-001A	COMPRESSION SPRING
52			LP40213-002B	SPECIAL SCREW,X3
53			QYTDST26062	SCREW,X2 HEAD BASE
54			QAH0023-201	LOADING MOTOR
55			PQ43545-1-2	MOTOR PULLEY
56			LP30233-003A	MOTOR GUIDE
57			QYTPST30062	SCREW,X2
58			LP30005-003A	BELT,LOADING MOTOR
59			LP20791-002B	CONTROL CAM
60			PQM30017-24	SLIT WASHER
61			LP40102-001A	WORM GEAR
62			LP40107-002A	LINK LEVER ASSY
63			PQM30017-24	SLIT WASHER
71			LP10201-003B	CONTROL PLATE
72			LP40379-001B	CTL.BRACKET(1)
73			QYTDSF2606M	SCREW
74			LP40105-002A	TENSION ARM ASSY
75			LP30003-010A	TENSION SPRING
77			LP40108-003D	TENSION BRAKE ASSY
78			PQ45302-1-3	ADJUST PIN
79			LP30232-002A	T.ARM BEARING
80			LP40532-004A	MAIN BRAKE ASSY (SUPPLY)
81			LP40111-006A	MAIN BRAKE AY (TAKE-UP)
82			LP30003-022A	TENSION SPRING
83			LP40112-001F	SUB BRAKE ASSY(TAKE UP)
84			LP40357-002A	TENSION SPRING
85			LP40461-001A	CAPSTAN BRAKE ASSY
86			QARC067-004	CAPSTAN MOTOR
87			QYTDSF2606M	SCREW,X3
88			LP30005-001A	BELT,CAPSTAN MOTOR
89			LP40114-038A	IDLER ARM ASSY
90			LP30016-001A	SLIT WASHER
91			LP40459-003D	CLUTCH UNIT
92			PQM3001-7-47	SLIT WASHER
93			LP40446-002B	CLUTCH GEAR 1
94			LP40442-001A	DIRECT GEAR
95			LP40483-002A	COMPRESSION SPRING
96			LP30016-001A	SLIT WASHER
99			LP40554-001A	COMPRESSION SPRING3,C.GEAR1
100			LP40484-001F	CHANGE LEVER ASSY
101			LP40512-002B	COMPRESSION SPRING
102			LP30235-002B	IDLER LEVER
103			LP40420-001A	REEL DISK ASSY(SUPPLY)
104			LP40421-001A	REEL DISK ASSY(TAKE UP)
105			LP30017-015A	SPACER,C.REEL DISK
106			QSW0554-003	ROTARY ENCODER
107			QYTPST26202	SCREW
108			LP40123-001A	REEL SHAFT,X2
109			LP30017-019A	SPACER,C.GEAR1
110			LP30237-002B	CASSETTE GEAR
111			LP30239-003F	LIMIT GEAR(1)
112			LP30240-002G	LIMIT GEAR(2)
113			LP40135-001E	TORSION SPRING
114			LP30242-002A	RELAY GEAR
115			LP30339-002E	OPENER GUIDE
116			LP40214-001B	C.H.BRACKET
117			PQM30017-47	SLIT WASHER,X2
118			LP20240-001D	DRIVE GEAR
119			LP20240-001C	DRIVE ARM
120			LP40137-001A	TORSION SPRING
121			LP10061-002L	SIDE HOLDER(L)
122			LP10062-002R	SIDE HOLDER(R)
123			LP30256-006A	LOCK LEVER(L)
124			LP30256-001H	LOCK LEVER(R)
125			LP40166-001A	TORSION SPRING(L)
126			LP40218-001B	TORSION SPRING(R)
127			LP20257-001F	CASSETTE HOLDER
128			LP30244-009G	GUIDE RAIL
129			LP30245-002E	REC SAFETY LEVER
130			LP30003-004A	TENSION SPRING
131			LP20678-001C	TOP GUIDE
132			LP30600-001C	HOLD PLATE
133			LP40450-003A	PAD,X2 HOLD PLATE
134			LP30003-025B	TENSION SPRING
135			LP30003-024A	TENSION SPRING
136			LP40481-003A	ROLLER CAM ASSY
137			LP30019-014A	PAD,X2 CASSETE HOLDER
138			LP40545-001A	TORSION SPRING
151			LP20324-002E	DOOR OPENER

# △	REF No.	PART No.	PART NAME, DESCRIPTION
********** MAIN BOARD ASSEMBLY <03> **********			
	PW1	LPA1004B-52E	MAIN BOARD ASSY,DD888EU
		LPA1004B-56F	MAIN BOARD ASSY,DD856EK
	IC1	JCP6017-MSA	IC
	IC201	LC7475-9750	IC
	IC2201	AN6961FBP	IC
	IC2501	LC8840SJE	IC
	IC3001	HD6432194A56F	IC,DD856EK
		HD6432194A54F	IC,DD888EU
	IC3002	S-80728AN-DR-X	IC
		or S-80828ANUP-W	IC
	IC3003	M24C08-BW6	IC
		or S-24C08ADP	IC
		or AT24C08-10PC	IC
		or X24C08P	IC
		or 24LC08B/P	IC
	IC3004	TA7291S	IC
	IC3301	M38513M4C56FP	SOP IC(MPU)
	IC3501	TA7291S	IC
	IC3961	TC7W241FU	IC(DIGITAL)
	IC3962	TC7W241FU	IC(DIGITAL)
	IC5301	LA5834-N	IC
	IC6080	BA15218F-XE	IC
	Q1	2SB1218A/QR/-X	TRANSISTOR
		or 2PA1978/R/-X	TRANSISTOR
		or 2SA1578A/QR/-X	TRANSISTOR
	Q2	UN521E	TRANSISTOR
		or RN1309	TRANSISTOR
		or DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
	Q6	2SB1218A/QR/-X	TRANSISTOR
		or 2PA1978/R/-X	TRANSISTOR
		or 2SA1578A/QR/-X	TRANSISTOR
	Q34	2SC4081/S/-X	TRANSISTOR
	Q35	2SC4081/S/-X	TRANSISTOR
	Q36	2SC4081/S/-X	TRANSISTOR
	Q37	2SC4081/S/-X	TRANSISTOR
	Q38	2SD1819A/QR/S-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q39	2SB1218A/QR/-X	TRANSISTOR
		or 2PA1978/R/-X	TRANSISTOR
		or 2SA1578A/QR/S-X	TRANSISTOR
	Q49	2SC3930/S/-X	TRANSISTOR
	Q152	2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/S-X	TRANSISTOR
		or 2PA1578/R/-X	TRANSISTOR
	Q153	2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
	Q207	2SB1218A/QR/-X	TRANSISTOR
		or 2SA1578A/QR/-X	TRANSISTOR
		or 2PA1578/R/-X	TRANSISTOR
	Q208	2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
	Q2001	2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
	Q2002	2SC4081/QR/S-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2003	DTA144WU	TRANSISTOR
		or PDTA144WU	TRANSISTOR
		or RN2309	TRANSISTOR
		or UN511E	TRANSISTOR
	Q2051	2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
	Q2052	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1578/R/-X	TRANSISTOR
	Q2053	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2054	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1578/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
	Q2055	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2061	2SC4081/QR/S-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2062	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1578/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
	Q2063	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2102	DTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
		or PDTC144WU	TRANSISTOR
	Q2151	2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
	Q2201	2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
	Q2202	2SC4081/QR/S-X	TRANSISTOR
		or 2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2209	DTA144WU	TRANSISTOR
		or PDTA144WU	TRANSISTOR
		or UN511E	TRANSISTOR
		or RN2309	TRANSISTOR
	Q2204	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2253	DTC114EU	TRANSISTOR,DD856EU
		or PDTC114EU	TRANSISTOR,DD888EU
		or UN5211	TRANSISTOR,DD888EU
		or RN1302	TRANSISTOR,DD856EU
	Q2258	DTA144WU	TRANSISTOR
		or RN2309	TRANSISTOR
		or UN511E	TRANSISTOR
	Q2501	2SD1819A/QR/S-X	TRANSISTOR
		or 2SC4081/QR/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2502	UN521E	TRANSISTOR
		or RN1309	TRANSISTOR
		or DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
	Q3001	2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
	Q3002	PTZ-MV16	PHOTO TRANSISTOR
	Q3003	PTZ-MV16	PHOTO TRANSISTOR
	Q3004	2SD1819A/QR/X-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q3005	2SC1740S/QR/S-T	TRANSISTOR
		or 2SC3199/YG/-T	TRANSISTOR
	Q3008	UN521E	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or DTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
	Q3501	2SD1819A/QR/S-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QR/S-X	TRANSISTOR
	Q4001	UN5211	TRANSISTOR
		or RN1302	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or DTC114EU	TRANSISTOR
	Q5101	2SK2632-CS14	POWER MOS FET
		or 2SK2129-LT	POWER MOS FET
		or 2SK2632	POWER MOS FET
		or 2SK2129	POWER MOS FET
	Q5102	2SD2144S/UVW-T	TRANSISTOR
	Q5301	2SB1256	TRANSISTOR
	Q5302	DTA114TU	TRANSISTOR
		or PDTC114TU	TRANSISTOR
		or RN1311	TRANSISTOR
		or UN5215	TRANSISTOR
	Q5303	2SD2144S/UVW-T	TRANSISTOR
	Q5304	2SA1450/ST/-T	TRANSISTOR
		or 2SD1302/ST/-T	TRANSISTOR
	Q5305	UN5111	TRANSISTOR
		or DTA114EU	TRANSISTOR
		or RN2302	TRANSISTOR
		or PDTA114EU	TRANSISTOR
	Q5306	2SB1256	TRANSISTOR
	Q5310	UN5211	TRANSISTOR
		or DTC114EU	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or RN1302	TRANSISTOR
	Q5311	2SA1576A/RS/-X	TRANSISTOR
		or 2SB1218A/RS/-X	TRANSISTOR
	Q5312	2SA1745/6-7/-X	TRANSISTOR
	Q6030	2SB1218A/RS/-X	TRANSISTOR
	Q6031	UN5211	TRANSISTOR
		or RN1302	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or DTC114EU	TRANSISTOR
	Q6032	UN5211	TRANSISTOR
		or RN1302	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or DTC114EU	TRANSISTOR
	D16	DA204U	DIODE
	D17	DA204U	DIODE
	D24	DA204U	DIODE
	D26	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
	D201	NRSA02J-152X	MG RESISTOR 1.5kΩ,1/10W
	D202	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
	D203	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
	D2001	1SS133	DIODE
		or 1N4148M	DIODE
	D2201	11ES2	DIODE
	D2501	1SS355	DIODE
	D3001	LNB823ILB1VI	LE DIODE
	D3002	1SS133	DIODE
	D3003	RD39ES/B3/-T2	ZENER DIODE
		or MTZJ39C	ZENER DIODE
	D3004	11E2-T5	DIODE
	D3005	11E2-T5	DIODE
	D3008	1SS355	DIODE
	D3961	RB721Q-40-T2	SB DIODE
	D3965	RB721Q-40-T2	SB DIODE
	D4001	1SS355	DIODE
	D4002	1SS355	DIODE
	D5201	S1WBJA60F4102	BRIDGE DIODE
		or S1WBJA60F4072X	BRIDGE DIODE
		or S1WBJA60F4052X	BRIDGE DIODE
	D5101	AU01	FR DIODE
		or ERA18-04-T2	FR DIODE
		or 1SR153-400-T2	FR DIODE
		or 10EL54	FR DIODE
		or PG104RS	FR DIODE
	D5102	AU01	FR DIODE
		or PG104RS	FR DIODE
		or 1SR153-400-T2	FR DIODE
		or 10EL54	FR DIODE
		or ERA18-04-T2	FR DIODE
	D5103	1SS133	DIODE
	D5105	1SS133	DIODE
	D5201	AK04	DIODE
		or 1S4	SB DIODE
		or 11EQS04	SB DIODE
	D5203	AU01Z	FR DIODE
		or ERA18-02-T2	FR DIODE
		or PG104RS	FR DIODE
		or 10EL52	FR DIODE
		or 1SR153-400-T2	FR DIODE
	D5204	AU01Z	FR DIODE
		or PG104RS	FR DIODE
		or 10EL52	FR DIODE
		or ERA18-02-T2	FR DIODE
		or 1SR153-400-T2	FR DIODE
	D5205	AU01Z	FR DIODE
		or ERA18-02-T2	FR DIODE
		or 1SR153-400-T2	FR DIODE
		or 10EL52	FR DIODE
		or PG104RS	FR DIODE
	D5209	ERA18-02-T2	FR DIODE
		or PG104RS	FR DIODE
		or 10EL52	FR DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		or 1SR153-400-T2	FR DIODE	
D5210		AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or PG104R6	FR DIODE	
		or 1SR153-400-T2	FR DIODE	
		or 1SS52	FR DIODE	
D5211		AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-400-T2	FR DIODE	
		or 1SS52	FR DIODE	
		or PG104R6	FR DIODE	
D5212		21DQ04	BARRIER DIODE	
		or SB240-F26	SB DIODE	
		or RK14LF-B3	BARRIER DIODE	
D5301		MTZJ11A	ZENER DIODE	
		or RD15ES/B3-T2	ZENER DIODE	
D5302		MTZJ6.8A	ZENER DIODE	
		or RD6.8ES/B1-T2	ZENER DIODE	
D5303		MTZJ7C	ZENER DIODE	
		or RD7ES/B3-T2	ZENER DIODE	
D5304		1SS133	DIODE	
D5305		1IE2-T5	DIODE	
D5307		1SS133	DIODE	
D5308		1SS133	DIODE	
D5309		1SS133	DIODE	
D5311		RD5.1ES/B3/-T2	ZENER DIODE	
		or MTZJ5.1C	ZENER DIODE	
D6002		HZ30-2L-T2	ZENER DIODE	
		or HZ30-2LTD	Z DIODE (M)	
R1		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2		NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R3		NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R4		NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
R5		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R6		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R7		NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R10		NRSA02J-122X	MG RESISTOR	1kΩ,1/10W
R11		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R13		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R15		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R16		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R20		NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
R24		NRVA02C-682X	CMF RESISTOR	6.8kΩ,1/10W
R25		NRVA02C-152X	CMF RESISTOR	1.5kΩ,1/10W
R52		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R56		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R57		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R60		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R62		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R68		NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R69		NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R120		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R121		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R123		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R124		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R127		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R156		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R170		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R171		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R190		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R197		NRSA02J-106X	MG RESISTOR	10MΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
R201			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R202			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R208			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R209			NRSA02J-512X	MG RESISTOR	5.1kΩ,1/10W
R210			NRSA02J-162X	MG RESISTOR	1.6kΩ,1/10W
R211			NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R212			NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R213			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R216			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R218			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R219			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R229			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R2001			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2002			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2003			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2004			NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R2005			NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R2006			NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2007			NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2009			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2013			NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R2014			NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2018			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2019			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2020			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2063			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2064			NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2065			NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2556			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2057			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2058			NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2059			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2060			NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2061			NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2062			NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2063			QRE141J-151Y	RESISTOR	150Ω,1/4W
R2064			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2065			NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2155			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R2151			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2152			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2201			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2202			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2203			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2204			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2205			NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2207			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2208			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2209			NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2210			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2211			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2212			NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2213			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2214			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2215			NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2216			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2217			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2218			NRSA02J-562X	MG RESISTOR	560Ω,1/10W
R2219			NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2220			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2221			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
R2222			NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2223			NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2224			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2225			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2226			NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R2227			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2228			NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2229			NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2230			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2231			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2236			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2237			NRSA02J-511X	MG RESISTOR	510Ω,1/10W
R2239			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2240			NRSA02J-511X	MG RESISTOR	510Ω,1/10W
R2241			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2242			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2243			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2244			NRSA02J-560X	MG RESISTOR	56Ω,1/10W
R2251			NRSA02J-303X	MG RESISTOR	30kΩ,1/10W
R2252			NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R2254			NRSA02J-472X	MG RESISTOR,DO686EU	4.7kΩ,1/10W
R2501			NRSA02J-202X	MG RESISTOR	2.2kΩ,1/10W
R2502			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2503			NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2504			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2505			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2506			NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2507			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2508			NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
R2509			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2510			NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2511			NRSA02J-154X	MG RESISTOR	150kΩ,1/10W
R2512			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2513			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2514			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2515			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2516			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2520			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2521			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2522			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R3011			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3012			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3013			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3014			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3015			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3016			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3017			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3018			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R3019			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3020			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3021			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3022			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3025			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3026			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3027			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3029			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3030			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3031			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3033			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3034			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3035			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
R3036			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3037			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3038			NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R3039			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3040			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3041			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3042			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3044			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3046			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3047			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3048			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3049			NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R3050			NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R3051			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3052			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3053			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3054			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3055			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3056			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3058			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3059			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3060			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3061			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3062			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3063			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3068			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3069			NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3071			NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R3072			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3073			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3074			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3075			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3076			NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3077			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3078			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3079			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3080			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3081			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3083			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3085			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3086			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3087			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3088			NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R3089			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3090			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3091			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3092			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3093			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3094			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3095			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3096			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3097			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3103			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3104			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3105			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3106			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3201			NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3202			NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3203			NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R3204			NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W

# △ REF No.	PART No.	PART NAME, DESCRIPTION
R3205	QRE141J-181Y	RESISTOR
R3206	NRSA02J-183X	MG RESISTOR
R3207	NRSA02J-183X	MG RESISTOR
R3208	QRE141J-181Y	RESISTOR
R3209	QRE141J-273Y	RESISTOR
R3210	NRSA02J-181X	MG RESISTOR
R3211	NRSA02J-273X	MG RESISTOR
R3212	QRE141J-474Y	RESISTOR
R3213	NRSA02J-334X	MG RESISTOR
R3214	NRSA02J-103X	MG RESISTOR
R3215	NRSA02J-103X	MG RESISTOR
R3216	NRSA02J-103X	MG RESISTOR
R3217	NRSA03J-562X	MG RESISTOR
R3218	NRSA02J-472X	MG RESISTOR
R3219	NRSA02J-472X	MG RESISTOR
R3220	NRSA02J-104X	MG RESISTOR
R3222	NRSA02J-472X	MG RESISTOR
R3223	NRSA02J-472X	MG RESISTOR
R3224	NRSA02J-472X	MG RESISTOR
R3225	NRSA02J-182X	MG RESISTOR
R3229	NRSA02J-105X	MG RESISTOR
R3230	NRSA02J-472X	MG RESISTOR
R3231	NRSA02J-102X	MG RESISTOR
R3233	NRSA02J-103X	MG RESISTOR
R3234	NRSA02J-103X	MG RESISTOR
R3235	NRSA02J-332X	MG RESISTOR
R3236	NRSA02J-332X	MG RESISTOR
R3237	NRSA02J-103X	MG RESISTOR
R3238	NRSA02J-103X	MG RESISTOR
R3239	NRSA02J-103X	MG RESISTOR
R3240	NRSA02J-103X	MG RESISTOR
R3241	NRSA02J-103X	MG RESISTOR
R3242	NRSA02J-472X	MG RESISTOR
R3244	NRSA02J-102X	MG RESISTOR
R3251	NRSA02J-103X	MG RESISTOR
R3304	NRSA02J-182X	MG RESISTOR
R3305	NRSA02J-102X	MG RESISTOR
R3306	NRSA02J-102X	MG RESISTOR
R3307	NRSA02J-472X	MG RESISTOR
R3308	NRSA02J-102X	MG RESISTOR
R3309	NRSA02J-102X	MG RESISTOR
R3311	NRSA02J-102X	MG RESISTOR
R3312	NRSA02J-102X	MG RESISTOR
R3313	NRSA02J-471X	MG RESISTOR
R3314	NRSA02J-471X	MG RESISTOR
R3316	NRSA02J-102X	MG RESISTOR
R3317	NRSA02J-102X	MG RESISTOR
R3318	NRSA02J-472X	MG RESISTOR
R3319	NRSA02J-105X	MG RESISTOR
R3323	NRSA02J-R68X	MG RESISTOR
R3324	NRSA02J-102X	MG RESISTOR
R3325	NRSA02J-102X	MG RESISTOR
R3327	NRSA02J-102X	MG RESISTOR
R3328	NRSA02J-102X	MG RESISTOR
R3329	NRSA02J-102X	MG RESISTOR
R3330	NRSA02J-102X	MG RESISTOR
R3331	NRSA02J-102X	MG RESISTOR
R3332	NRSA02J-102X	MG RESISTOR
R3335	NRSA02J-102X	MG RESISTOR
R3336	NRSA02J-102X	MG RESISTOR
R3337	NRSA02J-102X	MG RESISTOR

# △ REF No.	PART No.	PART NAME, DESCRIPTION
R3338	NRSA02J-102X	MG RESISTOR
R3339	NRSA02J-102X	MG RESISTOR
R3340	NRSA02J-102X	MG RESISTOR
R3341	NRSA02J-102X	MG RESISTOR
R3342	NRSA02J-102X	MG RESISTOR
R3353	NRSA02J-472X	MG RESISTOR
R3354	NRSA02J-472X	MG RESISTOR
R3501	NRSA02J-153X	MG RESISTOR
R3502	NRSA02J-272X	MG RESISTOR
R3503	NRSA02J-153X	MG RESISTOR
R3504	NRSA02J-223X	MG RESISTOR
R3505	NRSA02J-562X	MG RESISTOR
R3506	NRSA02J-123X	MG RESISTOR
R3981	NRSA02J-472X	MG RESISTOR
R3982	NRSA02J-183X	MG RESISTOR
R4001	NRSA02J-472X	MG RESISTOR
R4003	NRSA02J-561X	MG RESISTOR
R4004	NRSA02J-561X	MG RESISTOR
R4005	NRSA02J-562X	MG RESISTOR
R4006	NRSA02J-R70X	MG RESISTOR
R4007	NRSA02J-102X	MG RESISTOR
R4008	NRSA02J-102X	MG RESISTOR
R4009	NRSA02J-102X	MG RESISTOR
R4010	NRSA02J-102X	MG RESISTOR
R4011	NRSA02J-392X	MG RESISTOR
R4012	NRSA02J-222X	MG RESISTOR
R4013	NRSA02J-102X	MG RESISTOR
R4014	NRSA02J-222X	MG RESISTOR
R4015	NRSA02J-225X	MG RESISTOR
R4016	NRSA02J-103X	MG RESISTOR
R4017	NRSA02J-102X	MG RESISTOR
R4018	NRSA02J-102X	MG RESISTOR
R4019	NRSA02J-103X	MG RESISTOR
R4020	NRSA02J-103X	MG RESISTOR
R4021	NRSA02J-103X	MG RESISTOR
R5101	QRE141J-334Y	RESISTOR
R5102	QRE141J-334Y	RESISTOR
R5103	QRE141J-683Y	RESISTOR
R5104	QRS02SJ-104G	CMF RESISTOR
R5106	QRT01DJ-R39X	MF RESISTOR
R5107	QRE121J-331Y	RESISTOR
R5108	QRE141J-222Y	RESISTOR
R5109	NRSA02J-681X	MG RESISTOR
R5110	NRSA02J-224X	MG RESISTOR
R5111	NRSA02J-821X	MG RESISTOR
R5112	NRSA02J-821X	MG RESISTOR
R5301	QRE113J-119Y	RESISTOR
R5302	NRSA02J-102X	MG RESISTOR
R5303	NRSA02J-122X	MG RESISTOR
R5304	QRZ0055-221X	FUSI RESISTOR
R5305	QRE141J-471Y	RESISTOR
R5306	NRSA03J-333X	MG RESISTOR
R5307	NRSA02J-102X	MG RESISTOR
R5308	NRSA02J-472X	MG RESISTOR
R5309	NRSA02J-222X	MG RESISTOR
R5310	NRSA02J-472X	MG RESISTOR
R5311	NRSA02J-222X	MG RESISTOR
R5312	NRSA02J-472X	MG RESISTOR
R5313	QRE141J-222Y	RESISTOR
R5314	NRSA02J-222X	MG RESISTOR
R5317	NRSA02J-273X	MG RESISTOR

# △ REF No.	PART No.	PART NAME, DESCRIPTION
R5318	NRSA05J-273X	MG RESISTOR
R5319	QRE141J-511Y	RESISTOR
R5320	NRSA02J-471X	MG RESISTOR
R5321	NRSA02J-221X	MG RESISTOR
R5322	NRSA02J-473X	MG RESISTOR
R5323	QRE141J-473Y	RESISTOR
R5324	QRE141J-102Y	RESISTOR
R5331	NRSA02J-3R0X	MG RESISTOR
R6020	NRSA02J-0R0X	MG RESISTOR
R6021	NRSA02J-0R0X	MG RESISTOR
R6022	NRSA02J-0R0X	MG RESISTOR
R6023	NRSA02J-0R0X	MG RESISTOR
R6030	NRSA02J-102X	MG RESISTOR
R6031	NRSA02J-271X	MG RESISTOR
R6032	NRSA02J-182X	MG RESISTOR
R6033	NRSA02J-182X	MG RESISTOR
R6050	NRSA02J-101X	MG RESISTOR
R6051	NRSA02J-101X	MG RESISTOR
R6052	NRSA02J-101X	MG RESISTOR
R6082	NRSA02J-100X	MG RESISTOR
R6508	NRSA02J-0R0X	MG RESISTOR
R6510	NRSA02J-0R0X	MG RESISTOR
R6553	QRD114J-0R0Y	RESISTOR
R6554	NRSA02J-0R0X	MG RESISTOR
R7530	NRSA02J-750X	MG RESISTOR
VR2251	QRE141J-0R0Y	RESISTOR
C1	QEKU1HM-105	E CAPACITOR
C3	NCB21HK-103X	CAPACITOR
C5	NCB21HK-103X	CAPACITOR
C6	NCB21EK-104X	CAPACITOR
C7	QETN1CM-477	E CAPACITOR
C9	NCB21HK-103X	CAPACITOR
C11	NCB21HK-103X	CAPACITOR
C12	NCB21EK-473X	CAPACITOR
C13	QERT1HM-335	E CAPACITOR
C14	NCB21EK-333X	CAPACITOR
C16	NCF21CC-105X	CAPACITOR
C17	NCB21HK-103X	CAPACITOR
C20	QEKU1HM-225	E CAPACITOR
C21	NCB21EK-104X	CAPACITOR
C23	NCB21HK-223X	CAPACITOR
C24	NCB21HK-474X	CAPACITOR
C25	NCB21EK-224X	CAPACITOR
C27	NDC21HJ-101X	CAPACITOR
C29	QEKU1EM-476	E CAPACITOR
C30	QEKU1EM-475	E CAPACITOR
C31	NCB21HK-223X	CAPACITOR
C32	NCB21HK-102X	CAPACITOR
C34	QFVF1HJ-104Z	F CAPACITOR
C37	QEKU1CM-478	E CAPACITOR
C38	NCB21HK-103X	CAPACITOR
C41	NCB21EK-104X	CAPACITOR
C42	NCB21HK-103X	CAPACITOR
C43	NCB21HK-103X	CAPACITOR
C44	NCB21EK-104X	CAPACITOR
C47	NCB21EK-104X	CAPACITOR
C48	QEKU0JM-476	E CAPACITOR
C49	NDC21HJ-331X	CAPACITOR
C52	NCB21HK-103X	CAPACITOR
C53	NCF21CZ-105X	CAPACITOR
C54	QEKU1HM-225	E CAPACITOR

# △ REF No.	PART No.	PART NAME, DESCRIPTION
C55	QEKU1CM-108	E CAPACITOR
C56	QEKU1HM-335	E CAPACITOR
C57	NCB21EK-104X	CAPACITOR
C58	NCB21EK-104X	CAPACITOR
C59	NCB21EK-473X	CAPACITOR
C61	NDC21HJ-330X	CAPACITOR
C62	NCB21EK-104X	CAPACITOR
C63	NDC21HC-151X	CAPACITOR
C64	QEKU0JM-227	E CAPACITOR
C65	NCB21EK-104X	CAPACITOR
C74	NRSA02J-0R0X	MG RESISTOR
C81	NDC21HJ-150X	CAPACITOR
C82	NDC21HJ-150X	CAPACITOR
C83	NDC21HJ-150X	CAPACITOR
C84	NDC21HJ-150X	CAPACITOR
C85	NCB21EK-104X	CAPACITOR
C86	QEKU1CM-476	E CAPACITOR
C91	NCB21EK-104X	CAPACITOR
C98	NCF21CC-105X	CAPACITOR
C107	NDC21HJ-5R0X	CAPACITOR
C134	NCB21EK-104X	CAPACITOR
C141	NCB21EK-104X	CAPACITOR
C150	QEKU0JM-336	E CAPACITOR
C164	NCB21HK-165X	CAPACITOR
C165	NCB21HK-165X	CAPACITOR
C171	NCB21HK-163X	CAPACITOR
C201	QEKU0JM-227	E CAPACITOR
C204	NDC21HJ-100X	CAPACITOR
C205	NCB21HK-333X	CAPACITOR
C207	NDC21HJ-330X	CAPACITOR
C209	NCB21CK-474X	CAPACITOR
C212	NCB21EK-104X	CAPACITOR
C213	QEKU1EM-475	E CAPACITOR
C214	NCB21CK-224X	CAPACITOR
C215	NCB21CK-224X	CAPACITOR
C216	QEKU0JM-227	E CAPACITOR
C217	NDC21HJ-560X	CAPACITOR
C218	NCB21AK-105X	CAPACITOR
C222	NCB21AK-105X	CAPACITOR
C2002	QEKC1CM-476	E CAPACITOR
C2003	NCB21HK-123X	CAPACITOR
C2004	QEKC1CM-226	E CAPACITOR
C2005	NCB21HK-102X	CAPACITOR
C2006	NCB21HK-331X	CAPACITOR
C2007	QEKC1CM-106	E CAPACITOR
C2008	NCB21HK-152X	CAPACITOR
C2009	NCB21EM-475	E CAPACITOR
C2010	QEKC1EM-475	E CAPACITOR
C2011	NCB21EK-393X	CAPACITOR
C2013	NCB21EK-333X	CAPACITOR
C2015	QEKC1CM-226	E CAPACITOR
C2016	QEKU1EM-475	E CAPACITOR
C2051	NCB21HK-331X	CAPACITOR
C2052	QFLC1HJ-333Z	F CAPACITOR
C2053	NCB21HK-332X	CAPACITOR
C2054	NCB21HK-103X	CAPACITOR
C2055	QEKC1CM-106	E CAPACITOR
C2061	QFLC1HJ-333Z	F CAPACITOR
C2062	NCB21HK-332X	CAPACITOR
C2063	NCB21HK-163X	CAPACITOR
C2064	QEKC1CM-106	E CAPACITOR

# △ REF No.	PART No.	PART NAME, DESCRIPTION
C2101	QEKJ1EM-475	E CAPACITOR 4.7μF/25V
C2102	QEKJ1CM-226	E CAPACITOR 22μF/16V
C2151	NDC21HJ-101X	CAPACITOR 100pF/50V
C2152	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2201	QEKJ1HM-104	E CAPACITOR 0.1μF/50V
C2202	QEKJ1HM-104	E CAPACITOR 0.1μF/50V
C2204	QEKJ1CM-226	E CAPACITOR 22μF/16V
C2205	QEKJ1EM-475	E CAPACITOR 4.7μF/25V
C2206	QEKJ1EM-475	E CAPACITOR 4.7μF/25V
C2207	QEKJ0JM-476	E CAPACITOR 47μF/6.3V
C2208	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2209	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2210	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2211	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2212	QEKJ0JM-476	E CAPACITOR 47μF/6.3V
C2213	QERPJM-476	E CAPACITOR 47μF/6.3V
C2214	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2215	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2216	QEKJ1HM-105	E CAPACITOR 1μF/50V
C2217	QEKJ1HM-105	E CAPACITOR 1μF/50V
C2218	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2219	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2220	QEKJ1CM-476	E CAPACITOR 47μF/16V
C2221	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2222	QEKJ1CM-226	E CAPACITOR 22μF/16V
C2225	QEKJ1HM-224	E CAPACITOR 0.22μF/50V
C2226	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2227	QEKJ1CM-106	E CAPACITOR 10μF/16V
C2230	NCB21CK-473X	CAPACITOR 0.047μF/16V
C2231	NCB21HK-153X	CAPACITOR 0.015μF/50V
C2237	QEKJ1HM-224	E CAPACITOR 0.22μF/50V
C2233	NCB21HK-153X	CAPACITOR 0.015μF/50V
C2234	NCB21CK-473X	CAPACITOR 0.047μF/16V
C2251	NCB21EK-104X	CAPACITOR 0.1μF/25V
C2252	NCB21HK-222X	CAPACITOR 0.0022μF/50V
C2253	NCB21HK-223X	CAPACITOR 0.022μF/50V
C2256	NCP21EZ-104X	CAPACITOR 0.1μF/25V
C2257	QERPJM-476	E CAPACITOR 47μF/6.3V
C2258	NCB21EK-104X	CAPACITOR 0.1μF/25V
C2259	NCB21EK-104X	CAPACITOR 0.1μF/25V
C2260	NDC21HJ-181X	CAPACITOR,DO668EU 180pF/50V
C2261	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2301	QEKJ0JM-107	E CAPACITOR 100μF/6.3V
C2302	NCB21HK-562X	CAPACITOR 0.0056μF/50V
C2503	QERF1HM-105	E CAPACITOR 1μF/50V
C2505	QEKJ0JM-107	E CAPACITOR 100μF/6.3V
C2506	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2507	NBE20JM-226X	T CAPACITOR 22μF/6.3V
C2508	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2509	NBE20JM-106X	T CAPACITOR 10μF/6.3V
C2510	QEKJ1CM-476	E CAPACITOR 47μF/16V
C2511	NCB21EK-222X	CAPACITOR 0.0022μF/25V
C2512	NDC21HJ-331X	CAPACITOR 330pF/50V
C2513	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2516	NCB21HK-102X	CAPACITOR 0.001μF/50V
C2519	NCB21HK-103X	CAPACITOR 0.01μF/50V
C2520	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3002	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3003	QEKJ1HM-106	E CAPACITOR 10μF/50V
C3004	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3010	QEZG244-229	EDL CAPACITOR,DO668EU 0.0022Ω/5.5V

# △ REF No.	PART No.	PART NAME, DESCRIPTION
C3011	QETJ0JM-478	E CAPACITOR,DO865EK 4700μF/6.3V
C3012	QEKJ0JM-107	E CAPACITOR 100μF/6.3V
C3013	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3014	NBE20JM-226X	T CAPACITOR 22μF/6.3V
C3015	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3019	NDC21HJ-101X	CAPACITOR 100pF/50V
C3020	NDC21HJ-101X	CAPACITOR 100pF/50V
C3021	NDC21HJ-101X	CAPACITOR 100pF/50V
C3022	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3023	NBE20JM-106X	T CAPACITOR 10μF/6.3V
C3024	NDC21HJ-120X	CAPACITOR,DO666EK 12pF/50V
	NDC21HJ-220X	CAPACITOR,DO668EU 22pF/50V
C3025	QACT25S-226X	TRIM CAPACITOR,INNER CLOCK,DO868EU
C3026	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3027	NBE20JM-106X	T CAPACITOR 10μF/6.3V
C3028	NDC21HJ-101X	CAPACITOR 100pF/50V
C3029	NDC21HJ-101X	CAPACITOR 100pF/50V
C3030	NBE20JM-226X	T CAPACITOR 22μF/6.3V
C3031	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3032	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3033	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3035	NDC21HJ-180X	CAPACITOR 18pF/50V
C3037	NDC21HJ-120X	CAPACITOR 12pF/50V
C3038	NDC21HJ-101X	CAPACITOR 100pF/50V
C3039	NDC21HJ-101X	CAPACITOR 100pF/50V
C3040	NCF21CZ-105X	CAPACITOR 1μF/16V
C3041	NDC21HJ-120X	CAPACITOR,DO865EK 12pF/50V
C3042	QETJ0JM-478	E CAPACITOR,DO868EU 470μF/6.3V
C3901	NBE20JM-226X	T CAPACITOR 22μF/6.3V
C3932	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3934	NCB21HK-103X	CAPACITOR 0.01μF/50V
C3501	NCB21HK-102X	CAPACITOR 0.001μF/50V
C3502	QEKJ1EM-335	E CAPACITOR 3.3μF/25V
C3503	NCB21EK-104X	CAPACITOR 0.1μF/25V
C3901	NCB21EK-104X	CAPACITOR 0.1μF/25V
C4001	NBE20JM-225X	T CAPACITOR 2.2μF/6.3V
C4002	NCB21EK-104X	CAPACITOR 0.1μF/25V
C4003	NCB21HK-102X	CAPACITOR 0.001μF/50V
C4004	NBE20JM-226X	T CAPACITOR 22μF/6.3V
C4005	NCB21EK-223X	CAPACITOR 0.022μF/25V
C4006	NB64QJM-476X	T CAPACITOR 47μF/6.3V
C4007	NCB21HK-561X	CAPACITOR 560pF/50V
C4008	NCB21AK-105X	CAPACITOR 1μF/16V
C4009	NCB21HK-563X	CAPACITOR 0.056μF/50V
C4010	NCB21EK-223X	CAPACITOR 0.022μF/25V
C4011	NCB21EK-104X	CAPACITOR 0.1μF/25V
C4012	NCB21EK-224X	CAPACITOR 0.22μF/25V
C4013	NCB21EK-683X	CAPACITOR 0.068μF/25V
C4014	NDC21HJ-101X	CAPACITOR 100pF/50V
C4015	NCB21HJ-102X	CAPACITOR 0.001μF/50V
△ C5001	QFZP001-683	F CAPACITOR 0.068μF/250V
△ C5002	QFZP001-223	F CAPACITOR 0.033μF/250V
△ C5005	QCZ9071-222	CAPACITOR 0.0022μF/250V
C5006	QEZ0375-686	E CAPACITOR 68μF/400V
C5101	QCZQ212-472	CAPACITOR 0.0047μF/1KV
C5102	QCZQ332-392Z	CAPACITOR 3900pF/1KV
C5104	QFTN1HM-105	E CAPACITOR 1μF/50V
C5105	QFN31HJ-183	F CAPACITOR 0.018μF/50V
C5106	QCBB1HJ-271	CAPACITOR 270pF/50V
C5107	QFV91HJ-104	F CAPACITOR 0.1μF/50V
C5110	QCZQ332-392Z	CAPACITOR 3900pF/1KV

# △ REF No.	PART No.	PART NAME, DESCRIPTION
C5201	QEMUJUM-227	E CAPACITOR 220μF/6.3V
C5202	QEMT1CM-827	E CAPACITOR 820μF/16V
C5203	QEMT1AM-128	E CAPACITOR 1200μF/10V
C5204	QETN2AM-475	E CAPACITOR 4.7μF/100V
C5205	QETN1HM-105	E CAPACITOR 1.0μF/50V
C5206	QEMU1EM-187	E CAPACITOR 180μF/25V
C5207	QETN1CM-227	E CAPACITOR 220μF/16V
C5208	QETN1AM-227	E CAPACITOR 220μF/10V
C5311	QEMUJUM-227	E CAPACITOR 220μF/6.3V
C5302	QETN1HM-106	E CAPACITOR 10μF/50V
C5303	QETN1CM-107	E CAPACITOR 100μF/16V
C5304	QFLC1HJ-183Z	F CAPACITOR 0.018μF/50V
C5305	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5305	QETN1AM-107	E CAPACITOR 100μF/10V
C5307	QETN1CM-226	E CAPACITOR 22μF/16V
C5308	QETN1EM-476	E CAPACITOR 47μF/25V
C5309	QETN1CM-107	E CAPACITOR 100μF/16V
C5310	QEKJ1HM-105	E CAPACITOR 1μF/50V
C5606	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5607	QETN1AM-337	E CAPACITOR 330μF/10V
C5608	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5612	QEKJ1CM-478	E CAPACITOR 47μF/16V
C5613	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5614	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5616	NCB21HK-103X	CAPACITOR 0.01μF/50V
C5620	NDC21HJ-161X	CAPACITOR 160pF/50V
C6021	NDC21HJ-101X	CAPACITOR 100pF/50V
C6022	NDC21HJ-101X	CAPACITOR 100pF/50V
C6032	NCB21HK-473X	CAPACITOR 0.047μF/50V
C6033	NRSA02J-680X	MG RESISTOR 0Ω,1/16W
C6037	QEKJ1HM-106	E CAPACITOR 10μF/50V
C6055	NDC21HJ-220X	CAPACITOR 22pF/50V
L1	QQL29BJ-100Z	COIL 10μH
L4	QQL29BJ-100Z	COIL 10μH
L5	QRE141-332Y	RESISTOR 3.3kΩ,1/4W
L7	QQL22BJ-820Z	COIL 0.22μH
L8	QQL29BJ-101Z	COIL 100μH
L9	QQL29BJ-100Z	COIL 10μH
L16	QQL29BJ-100Z	COIL 10μH
L19	QQR29D-001	COIL 12μH
L24	QQL29BJ-100Z	COIL 10μH
L25	QQL29BJ-100Z	COIL 10μH
L201	QQL29BK-1R0Z	COIL 1μH
L202	QQL07J-330Y	COIL 33μH
L203	QQL07J-220Y	COIL 22μH
L204	QQL29BJ-100Z	COIL 10μH
L205	QQL07J-220Y	COIL 22μH
L2501	QQL29BJ-100Z	COIL 10μH
L2502	QQL29BJ-151Z	COIL,DO868EU 150μH
L2501	QQL29BJ-2R2Z	COIL 2.2μH
L5201	PELN1184	COIL 33μH
L5202	PELN1185	COIL 82μH
L6001	QQL29BJ-100Z	COIL 10μH
L6002	QQL29BJ-100Z	COIL,DO868EU 10μH
L6004	QQL29BJ-100Z	COIL 10μH
L6031	QQL29BK-1R0Z	COIL 1μH
LPF2901	PELN1137	LOW PASS FILTER
CF2501	QAX0359-001Z	RESONATOR
CF3301	PUE0440-2	RESONATOR
LC2901	QQL29BJ-100Z	COIL 10μH
X1	QAX0530-001	CRYSTAL RESONATOR
X3001	QAX0444-001	CRYSTAL RESONATOR,DO866EK

# △ REF No.	PART No.	PART NAME, DESCRIPTION
	QAX0445-001	CRYSTAL RESONATOR,DO868EU
X3002	QAX0527-001	CRYSTAL RESONATOR
K5101	QQR0578-001Z	FERRITE BEAD
PC3001	GP35123	IC(PHOTO SENSOR
PC3002	GP35123	IC(PHOTO SENSOR
△ PC5101	PC123F2	PH COUPLER
△ PC5301	PS2501-1	PH COUPLER
T2001	PELN0990	OSC TRANSFORMER
T2002	PELN0991	OSC TRANSFORMER
△ T5001	QQS0203-001	SW TRANSFORMER
TU6001	QAU0107-001	TUNER
ET1	PCB1620-1-5	EARTH PLATE(RP)
ET2	LP40547-001B	EARTH PLATE
△ HS1	LP40999-001A	HEAT SINK,C5101
SO1	LP30563-001B	SHIELD CASE(FRE/REC)
OT1	QYTDSF30102	SCREW,X2TERMINAL
OT2	QYTDST3026Z	SCREW,Q5101
FC5001	QNQ0005-001Z	FUSE CLIP,F5001
FC5002	QNQ0005-001Z	FUSE CLIP,F5001
△ LF5001	PELN1204-01-01	LINE FILTER
△ LF5002	QQP0600-001	LINE FILTER
CN1	QGP1028CY-11	FPC CONNECTOR,(1-11)LD.DRUM
CN2001	QGP1207CY-07	FPC CONNECTOR,(1-7)M/C HEAD
CN2002	QGS2692U-02	CONNECTOR,(1-2)FE HEAD
CN3001	QGP1207CY-05	FPC CONNECTOR,(1-5)FLRUM MDA
CN3002	QGS2532U-02	CONNECTOR,(1-2)LMOTOR
CN3003	QGS2016M-03	CONNECTOR,(1-3)CAPMOTOR
CN3004	QGS2534J-04	CONNECTOR,(1-4)LRENCODER
CN3011	QGP1207CY-14	FPC CONNECTOR,(1-14)PRONT
CN3012	QGP1207CY-06	FPC CONNECTOR,(1-6)JOG
CN3501	QGS2013J-08	CONNECTOR,(1-8)DD MOTOR
△ CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN
CN7501	QGB2024CY-09S	CONNECTOR,(1-9)TERMINAL
CN7502	QGB2024CY-10S	CONNECTOR,(1-10)TERMINAL
CN7503	QGB2024CY-10S	CONNECTOR,(1-10)TERMINAL
CN7504	QGP1207C1-06	CONNECTOR,(1-6)
△ CP4001	ICP-N15	CIRCUIT PROTECTOR
△ CP5301	ICP-N38	CIRCUIT PROTECTOR
△ CP5302	ICP-N25	CIRCUIT PROTECTOR
△ F5001	QMF51E2-2R0J1	FUSE T2.0A,AC250V

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TERMINAL BOARD ASSEMBLY <06>

PWB	LPA10055-00A	TERMINAL BOARD ASSY
Q1101	RHT6055	TRANSISTOR
Q7104	2SB1218A/QR-X	TRANSISTOR
	or 2SA1576/R-X	TRANSISTOR
	or 2SA1576A/QR-X	TRANSISTOR
R7112	NRSA02J-181X	MG RESISTOR 180Ω,1/10W
R7113	NRSA02J-471X	MG RESISTOR 470Ω,1/10W
R7114	NRSA02J-471X	MG RESISTOR 470Ω,1/10W
R7116	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R7117	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R7121	NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R7123	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R7124	NRSA02J-101X	MG RESISTOR 100Ω,1/10W

# △ REF No.	PART No.	PART NAME, DESCRIPTION
R7135	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R7138	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R7127	QRE141J-750Y	RESISTOR	75Ω,1/4W
R7140	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
R7141	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R7142	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R7143	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
R7145	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R7146	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
C7106	NCB21HK-223X	CAPACITOR	0.022μF,50V
C7107	NCD21HJ-330X	CAPACITOR	33pF,50V
C7108	NCB21HK-223X	CAPACITOR	0.022μF,50V
C7109	CEKJ1CM-476	CAPACITOR	47μF,16V
C7110	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7112	NCD21HJ-330X	CAPACITOR	33pF,50V
C7113	NCB21HK-223X	CAPACITOR	0.022μF,50V
C7114	NCB21HK-223X	CAPACITOR	0.022μF,50V
C7115	NCB21HK-681X	CAPACITOR	680pF,50V
C7116	NCB21HK-681X	CAPACITOR	680pF,50V
C7119	NCB21HK-102X	CAPACITOR	0.001μF,50V
C7120	NCB21HK-681X	CAPACITOR	680pF,50V
C7128	NCB21HK-681X	CAPACITOR	680pF,50V
C7133	NCB21HK-102X	CAPACITOR	0.001μF,50V
C7134	NCB21HK-102X	CAPACITOR	0.001μF,50V
C7150	NCB21HK-102X	CAPACITOR	0.001μF,50V
C7152	NCB21HK-102X	CAPACITOR	0.001μF,50V
L7103	QQL231J-1R0Y	COIL	1μH
L7105	QQL231J-1R0Y	COIL	1μH
L7107	QQL231J-R22Y	COIL	0.22μH
L7108	QQL231J-4R7Y	COIL	4.7μH
L7109	QQL231J-4R7Y	COIL	4.7μH
L7110	QQL231J-4R7Y	COIL	4.7μH
L7111	QQL231J-4R7Y	COIL	4.7μH
L7112	QQL231J-1R0Y	COIL	1μH
L7113	QQL231J-4R7Y	COIL	4.7μH
L7114	QQL231J-4R7Y	COIL	4.7μH
L7115	QQL231J-4R7Y	COIL	4.7μH
L7116	QQL231J-4R7Y	COIL	4.7μH
L7121	QQL231J-4R7Y	COIL	4.7μH
L7123	QQL231J-4R7Y	COIL	4.7μH
△ TB1	LP30562-009A	TERMINAL BOARD ASSY
ET1	PQ21987-1-1	EARTH PLATE(TERMINAL)
OT1	QYT30F3006Z	SCREW,X8
J7101	PEMC1177	RGB21PIN SOCKET,AV1
J7102	PEMC1177	RGB21PIN SOCKET,AV2
J7103	QNN0029-002	PIN JACK,A.OUT(R)
J7104	QNN0023-003	PIN JACK,A.OUT(L)
J7105	PEMC1190	MINI JACK,JLIP
J7109	QNS0150-021	2.5 JACK,LANC
J7110	PU60569	MINI JACK,R.PAUSE
CN7101	QGB024J1-09S	CONNECTOR,(1-10)MAIN
CN7102	QGB024J1-10S	CONNECTOR,(1-10)MAIN
CN7103	QGB024J1-10S	CONNECTOR,(1-10)MAIN

AUDIO CONTROL HEAD BOARD ASSEMBLY <12>

PW1	LPA10210-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

# △ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10265-01C	DEMOD BOARD ASSY
IC6701	TDA9874HV1-X	IC
Q6701	2SC3596/BCI-X	TRANSISTOR
D6701	1SV214	DIODE
R6701	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6703	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6705	NRSA02J-102X	MG RESISTOR	10Ω,1/10W
R6706	NRSA02J-102X	MG RESISTOR	10Ω,1/10W
R6707	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R6708	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R6709	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R6710	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R6711	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
R6713	NRSA02J-100X	MG RESISTOR	10Ω,1/10W
R6715	NRSA02J-103X	MG RESISTOR	10Ω,1/10W
R6716	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6717	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6719	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R6720	CRE141J-100Y	RESISTOR	10Ω,1/4W
R6721	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R6722	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R6723	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6724	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R6725	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6728	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
C6701	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6702	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6703	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6704	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6705	NCF21CZ-474X	CAPACITOR	0.47μF,16V
C6706	NCF21CZ-474X	CAPACITOR	0.47μF,16V
C6707	NCF21CZ-474X	CAPACITOR	0.47μF,16V
C6710	CEKJ1HM-334	E CAPACITOR	0.33μF,50V
C6711	NCB21EK-333X	CAPACITOR	0.033μF,25V
C6712	NCD21HJ-180X	CAPACITOR	18pF,50V
C6713	NCD21HJ-180X	CAPACITOR	18pF,50V
C6716	NCF21CZ-474X	CAPACITOR	0.47μF,16V
C6718	NCB21EK-224X	CAPACITOR	0.22μF,25V
C6719	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6720	NCD21HJ-1R0X	CAPACITOR	1pF,50V
C6722	NCF21CZ-474X	CAPACITOR	0.47μF,16V
C6723	NCD21HJ-101X	CAPACITOR	100pF,50V
C6724	NCD21HJ-101X	CAPACITOR	100pF,50V
C6725	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6729	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6730	CEKJ1CM-478	E CAPACITOR	47μF,16V
C6731	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6732	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6733	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C6734	NCB21HK-103X	CAPACITOR	0.01μF,50V
L6701	QQL231J-3R3Y	COIL	3.3μH
L6702	QQL231J-1R0Y	COIL	1μH
L6703	QQL231J-3R3Y	COIL	3.3μH
X6701	CAX0560-001	CRYSTAL RESONATOR
K6701	NQR0200-003X	FERRITE BEAD
K6702	NQR0200-003X	FERRITE BEAD
K6703	NQR0200-003X	FERRITE BEAD

# △ REF No.	PART No.	PART NAME, DESCRIPTION
K6704	NQR0200-003X	FERRITE BEAD
K6705	NQR0200-003X	FERRITE BEAD
K6706	NQR0200-003X	FERRITE BEAD
K6707	NQR0200-003X	FERRITE BEAD
BK1	LP40277-001A	BRACKET(BOARD)
CN6701	QGQ2502K1-10	HEADER PIN

DEMOD BOARD ASSEMBLY(DD865EK) <14>

# △ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10221-03B	DEMOD BOARD ASSY
IC6701	M52945CD	IC
	or M52947SP	IC
Q6701	2SC5066	TRANSISTOR
Q6702	2SC3354/TS/-T	TRANSISTOR
Q6704	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
	or PDTC114EU	TRANSISTOR
Q6705	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
	or PDTC114EU	TRANSISTOR
D6702	MTZJ9.1B	ZENER DIODE
D6703	1N4148M	DIODE
	or 1SS133	DIODE
D6704	1N4148M	DIODE
	or 1SS133	DIODE
R6701	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6702	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6703	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R6704	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6705	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R6706	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R6707	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6708	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6709	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R6710	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
R6712	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R5713	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R5714	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6715	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R6716	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R5717	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R5718	NRSA02J-684X	MG RESISTOR	680kΩ,1/10W
C6703	CEKJ1CM-338	E CAPACITOR	33μF,16V
C6704	CEKJ1CM-127	E CAPACITOR	100μF,16V
C6705	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6706	NCB21HK-223X	CAPACITOR	0.022μF,50V
C6707	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6708	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6709	CEKJ1CM-338	E CAPACITOR	33μF,16V
C6710	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6711	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6712	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6713	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6714	NCF21CZ-224X	CAPACITOR	0.22μF,16V
C6717	NCB21HK-223X	CAPACITOR	0.022μF,50V
C6718	CEKJ1CM-336	E CAPACITOR	33μF,16V
C6719	CEKJ1CM-106	E CAPACITOR	10μF,16V

DEMOD BOARD ASSEMBLY(DD869EU) <14>

# △ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10221-03B	DEMOD BOARD ASSY
IC6701	M52945CD	IC
	or M52947SP	IC
Q6701	2SC5066	TRANSISTOR
Q6702	2SC3354/TS/-T	TRANSISTOR
Q6704	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
	or PDTC114EU	TRANSISTOR
Q6705	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
	or PDTC114EU	TRANSISTOR
D6702	MTZJ9.1B	ZENER DIODE
D6703	1N4148M	DIODE
	or 1SS133	DIODE
D6704	1N4148M	DIODE
	or 1SS133	DIODE
R6701	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6702	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6703	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R6704	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6705	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R6706	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R6707	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6708	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6709	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R6710	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
R6712	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R5713	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R5714	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6715	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R6716	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R5717	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R5718	NRSA02J-684X	MG RESISTOR	680kΩ,1/10W
C6703	CEKJ1CM-338	E CAPACITOR	33μF,16V
C6704	CEKJ1CM-127	E CAPACITOR	100μF,16V
C6705	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6706	NCB21HK-223X	CAPACITOR	0.022μF,50V
C6707	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6708	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6709	CEKJ1CM-338	E CAPACITOR	33μF,16V
C6710	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6711	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6712	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6713	CEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6714	NCF21CZ-224X	CAPACITOR	0.22μF,16V
C6717	NCB21HK-223X	CAPACITOR	0.022μF,50V
C6718	CEKJ1CM-336	E CAPACITOR	33μF,16V
C6719	CEKJ1CM-106	E CAPACITOR	10μF,16V

# △ REF No.	PART No.	PART NAME, DESCRIPTION
C6720	CEKJ1CM-106	E CAPACITOR	10μF,16V
C6721	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6722	CEKJ1CM-106	E CAPACITOR	10μF,16V
C6723	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6727	NDC21HJ-470X	CAPACITOR	47pF,50V
C6728	NDC21HJ-470X	CAPACITOR	47pF,50V
C6729	NDC21HJ-6R0X	CAPACITOR	6pF,50V
C6730	NDC21HJ-1R0X	CAPACITOR	1pF,50V
L6701	QQL295K1-R4Z	COIL	1μH
L6702	QQL295J-3R3Z	COIL	3.3μH
L6703	QQL231J-990Y	COIL	99μH
L6704	QQL295K1-1R0Z	COIL	1μH
L6705	QQL231J-100Y	COIL	10μH
LC6701	QQR6657-013	NOISE FILTER
X6701	QAX0443-001	CRYSTAL RESONATOR
BK1	LP40277-02A	BRACKET(BOARD)
CN6701	QGQ2502K1-11	HEADER PIN(11-11)

SW/DISPLAY BOARD ASSEMBLY <28>

PW1	LPA10054-03C1	DISPLAY BOARD ASSY
IC7001	M35500DGP	IC
	or M35500DFP	IC
	or M35500DGP	IC
IC7002	PNA4652M00KB	IR DETECT UNIT
	or GP1U281X	IR DETECT UNIT
D7022	RD9.1ES-B2-T2	ZENER DIODE
	or 1Q9.1BS2	ZENER DIODE
	or MTZJ9.1B	ZENER DIODE
D7005	1SS133	DIODE
D7010	SLR-342YCF	LE DIODE
R7001	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7002	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7003	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7006	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7007	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7008	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7010	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7012	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7013	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7020	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7021	QRE141J-152Y	RESISTOR	1.5kΩ,1/4W
R7022	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7023	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7024	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7025	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7026	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
R7027	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7028	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7029	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7031	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R7032	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7033	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7034	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7035	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W

# △ REF No.	PART No.	PART NAME, DESCRIPTION	
R7036	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
R7037	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7038	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7041	QRE141J-331Y	RESISTOR	330Ω,1/4W
C7001	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C7002	QETC1HM-106	E CAPACITOR	10μF,50V
C7007	QETN1HM-476	E CAPACITOR	47μF,50V
C7009	QCSB1HJ-159	CAPACITOR	15pF,50V
C7010	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C7011	QETN1AM-227	E CAPACITOR	220μF,10V
C7019	QTV81EZ-223Y	CAPACITOR	0.022μF,25V
C7192	QCSB1HJ-681	CAPACITOR	680pF,50V
C7184	QCSB1HJ-681	CAPACITOR	680pF,50V
L7191	QRE141J-101Y	RESISTOR	100Ω,1/4W
L7192	QRE141J-101Y	RESISTOR	100Ω,1/4W
S7001	QSW0456-002Z	TACT SWITCH,POWER	
S7002	QSW0456-002Z	TACT SWITCH,CH+	
S7003	QSW0456-002Z	TACT SWITCH,CH-	
S7004	QSW0456-002Z	TACT SWITCH,REC	
S7005	QSW0456-002Z	TACT SWITCH,PAUSE	
S7010	QSW0456-002Z	TACT SWITCH,TIMER	
S7011	QSW0456-002Z	TACT SWITCH,REVIEW	
S7012	QSW0456-002Z	TACT SWITCH,SYNCRO EDIT	
S7013	QSW0456-002Z	TACT SWITCH,REC LINK	
S7014	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
S7015	QSW0456-002Z	TACT SWITCH,PLAY	
S7016	QSW0456-002Z	TACT SWITCH,F.INSERT	
S7017	QSW0456-002Z	TACT SWITCH,F.A.DUB	
DP7001	QLP0332-002	FL TUBE	
HD1	FCM4668	FDP HOLDER(E),DI7001	
HD2	FCM4669	FDP HOLDER(R),DI7001	
HD4	FCM30038-7	LED HOLDER,DI7010	
J7191	PEMC1009-04	PIN JACK,VIDEO IN	
J7192	PEMC1010-03	PIN JACK(SW),AB,IN	
J7193	PEMC1010-02	PIN JACK(SW),A/RIN	
CN7001	QGF1207C1-14	FPC CONNECTOR,(1-14)MAIN	
CN7191	QGF1207C1-05	FPC CONNECTOR,(5-7)MAIN	

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REC SAFETY BOARD ASSEMBLY <32>

PW2	LPA10054-01C2	REC SAFETY BOARD ASSY
S7041	QSW0602-004	PUSH SWITCH
FW7001	QUM232-0T44A4	PARA RIBON WIRE

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JOG BOARD ASSEMBLY <37>

PW3	LPA10054-02C3	JOG BOARD ASSY
LN7091	PEMB0976	JOG ASSY
CN7065	QGF1207F1-06	FPC CONNECTOR,(1-6)MAIN

# △ REF No.	PART No.	PART NAME, DESCRIPTION	
PW2	LPA10010-01A2	LOADING MOTOR BOARD ASSY	
C1	QFV61HJ-104	F CAPACITOR	0.1μF,50V
CT1	PUS6615-105	SUBSPACER(6.0),C1	
CN1	QGB2533K1-02	CONNECTOR	

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CNR BOARD ASSEMBLY <89>

PW1	LPA10089-01A	CNR BOARD ASSY	
IC901	TA1225N	IC	
R901	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R903	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
R905	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
C901	NBE20JM-475X	T CAPACITOR	4.7μF,6.3V
C902	NCB21AK-105X	CAPACITOR	1μF,10V
C903	NDK21HJ-820X	CAPACITOR	82pF,50V
C904	NCB21HK-103X	CAPACITOR	0.01μF,50V
C905	NCB21EK-104X	CAPACITOR	0.1μF,25V
C906	NCB21EK-104X	CAPACITOR	0.1μF,25V
C907	NCB21HK-103X	CAPACITOR	0.01μF,50V
C908	NCB21HK-103X	CAPACITOR	0.01μF,50V
C909	NCB21HK-472X	CAPACITOR	0.0047μF,50V
C910	NCB21EK-104X	CAPACITOR	0.1μF,25V
C911	NCB21HK-103X	CAPACITOR	0.01μF,50V
C912	NCB21HK-103X	CAPACITOR	0.01μF,50V
C913	NCB21EK-104X	CAPACITOR	0.1μF,25V
C914	NCB21HK-103X	CAPACITOR	0.01μF,50V
C915	NCB21HK-103X	CAPACITOR	0.01μF,50V
L901	QQL071J-330Y	COIL	33μH
SD1	LPA0562-001B	SHIELD CASE(CNR)	
CT1	PUS010	SPACER	
CN901	QGG2509M1-05	HEADER PIN	
CN902	QGG2509M1-06	HEADER PIN	

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LOADING MOTOR BOARD ASSEMBLY <55>